

RESEARCH NEWSLETTER

July, 2009

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FOREWORD

This second issue of the University Research Newsletter for the Academic Year 2008-2009 provides up-to-date information about the research and other scholarly activities undertaken by the University faculty members for the half-year period from January 2009 until June 2009. 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 significance; 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 the faculty members can actively participate in the research, which is not only beneficial to their own professional career but also to the development of the society at large.

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

Dr. Mohammad S. Al-Homoud
Dean of Scientific Research

2. ABSTRACTS OF SOME OF THE RESEARCH PROJECTS

1. Project No. IN090453

Principal Investigator: Dr. Uthman Baroudi (COE)

Co-Investigator #1: Dr. Shokri Selim (SE)

Title: Application Specific Wireless Sensor Networks: A Cross Layer Design

Abstract

This proposal has been prepared in response to the announcement of the deanship of Scientific Research at King Fahd University of Petroleum and Minerals (KFUPM). Wireless Sensor Network (WSN) is composed of hundreds sensor nodes that are deployed randomly in the physical field. These sensors have limited resources to communicate with other nodes to convey the monitored data. Hence, WSN is a multi hop wireless network and sensor nodes have to cooperate with each other for achieving the desired objectives. In addition, WSNs are application-specific networks where each application imposes its own service requirements. Due to such distinguished characteristics, the existing MAC and control routing protocols for traditional wireless multi hop networks can not be applied directly in the WSN. The literature is rich of many MAC and routing protocols for WSN. Most of these protocols aim at reducing the energy consumption in trade of the delay. Although many energy-efficient MAC and routing protocols are proposed, these protocols need to be optimized, and there is a need for better energy-efficient protocols. The proposed work intends to develop novel mechanisms of interaction between link layer network layer and application layer over wireless sensor networks (WSN). These mechanisms are supposed to be of an adaptive nature where the link layer parameters (e.g. number of retransmission), network layer parameters (e.g. routing protocol, routing selection) and application layer (type of application, availability of requested information, data fusion protocol) are varied dynamically based on the QoS requirements (i.e. delay, energy consumption, throughput). These new mechanisms aim toward a better realization of WSN applications (i.e. QoS requirements guarantee) for the intended environment. The research proposal intends to evaluate these mechanisms and study their impact on the overall performance of WSN via simulation and analytical techniques. Finally, as WSNs offer huge potential applications that can be designed to fit the Saudi environment. WSN can easily lend itself to a giant company such as ARAMCO and SABIC, just to mention few possible clients, where environment hazards, security enforcement, mining, and oil exploration are very critical to their day operations. Therefore, the outcome of this project is considered to be a very important industrial achievement.

2. Project No. IN090454

Principal Investigator: Dr. Tarek El-Basuny (ICS)

Title: Hybrid Computational Intelligence Framework for Handling of Bioinformatics Datasets

Abstract

This proposal is prepared for a study titled “Hybrid Computational Intelligence Framework for Handling of Bioinformatics Datasets”. The classification problem in the emerging field of Bioinformatics is a challenging task because the information about different diseases is either insufficient or lacking in authenticity as data is collected from different types of medical equipments. Moreover, the information gathered from various sources is subjective to imprecision and uncertainty. Imprecision arises when the data is not validated by experts. The objectives of the proposed project will present a type-2 FLS-based classification framework

for multivariate data to diagnose different types of diseases and is capable of handling imprecision and uncertainty. In addition, empirical studies regarding the impact of various parameters of FLS on this classifier will also be carried out. The performance of this new framework will be measured using well known datasets and the results will be compared with the most common existing classifiers in both computer science and statistics literatures. The progress and findings of this study will be communicated to KFUPM through progress reports and a final report with executive summary. The project will be completed in eighteen calendar months after the starting date. The cost of the study is provided separately.

3. Project No. IN090455

Principal Investigator: Dr. Tarek El-Basuny (ICS)

Title: A collaborative Multi-Agent Based Model of Personal Information Managers

Abstract

Almost all personal information managers (PIM) have some common basic functionalities that help the user managing his/her personal information. These basic functionalities include calendar, mail, contacts and tasks. However, the problem in all PIMs has turned from having too many menus, tabs and options to manage emails, contacts, tasks and notes. The user needs to visit multiple screens and to configure some settings to do a task. To facilitate the user's tasks, the user would like to have one interface agent in which s/he can do most of the tasks like to talk to human being or secretary while this interface agent delegates the task to multi-agents to perform the task. Building industrial multi-agent systems requires paying a great attention to all phases of the development life cycle in order to come up with a reusable product of high quality. Several agent oriented software engineering methodologies are developed to tailor the special characteristics of multi-agent systems. In this project, we will propose an agent-based methodology to guide the user through developing a framework-independent agent oriented model of personal information manager. The proposed model will be evaluated based on the completeness, scalability, development framework independency and the degree of autonomous behavior.

4. Project No. IN090456

Principal Investigator: Dr. Husain Masoudi (EE)

Co-Investigator #1: Dr. Mohammad Gondal (Phys)

Co-Investigator #2: Dr. Nahid Siddiqui (Chem)

Title: Laser Approach to Metal Nanoalloys, Its Optimization and Search for Novel Alloy Nanostructures

Abstract

The principal objective of this research proposal is to develop a novel process capable of producing different kinds of nano-structured metal alloys through laser-induced gas-phase decomposition. Specifically this objective will be achieved by using UV laser-co-photolysis and IR laser co-thermolysis of mixed organometallics by clustering and intermixing of extruded metal atoms and rapid cooling of spontaneously formed nano-sized multiple-metal clusters. The agglomerates depositing from the gas phase through these laser-enhanced processes will be examined and optimized for formation of unique nano-structured alloy materials which are not yet morphologically well known. These processes will be explored with selected volatile organometallics when clustering/coalescence events are challenging for

fabrication of binary alloys with improved properties or for the production of alloy materials from metals which are immiscible in the bulk. The new forms of nanoalloys that will be explored in this research using new approaches will be divided into four different classes - nano immiscible (i), nanomagnetic (ii) and nanoshape memory (iii) and nanocatalytic (iv) alloys.

The laser-deposited nanoalloys will be treated by heat to explore their ability to undergo post-deposition changes in structure and properties. For the characterization of laser generated nanoalloys, various techniques such as XRD, DSC, TGA, SEM, HRTEM, SAED, EDX, UV, FTIR, EPR and XP spectroscopy will be employed. In addition to these analytical techniques, magnetization and porosity measurements will also be carried out for study of other properties of nano materials.

The present project is designed to be fulfilled in six consecutive phases. A brief description of a future plan made up of additional phases is also included in the write up as a natural continuation of this work. It is also worth noting that this research project will promote interdisciplinary research and transfer of technology by the local development of the system for production of nano materials which is one of hottest topic worldwide. It will promote international collaboration with Laser centre of the Institute of Chemical Process Fundamentals, CZ. This work will also support nanotechnology research to emerge in the Kingdom and will enhance the image of Kingdom of Saudi Arabia on the international level in the cutting edge technology as a leading country.

The research project will be also benefit to Physics; Chemistry, Chemical Engineering department, Mechanical engineering (materials science) Electrical Engineering (nanophotonics) group for development of various new materials for semiconductor industry. Moreover, undergraduate and graduate students will be trained, working part-time on this project. This study will form also a technical base for applied research work, and the outcome of this research will be very useful for industrial applications and could be beneficial for SABIC, Saudi- Aramco and other petrochemical companies in the Kingdom. Effort will be taken to put strong emphasis for applications of new nanoalloys with enhanced properties and to patent the obtained results with regard to novel and improved uses of these materials.

4. Project No. IN090457

Principal Investigator: Dr. Ahmed Z. Al-Garni (AERO)

Co-Investigator #1: Dr. Aymen Kassem (Aero)

Title: Design, Testing and Optimization of Economically-Sound Small Solar Sea Water Desalination Units

Abstract

This project proposes a plan for designing, building, testing, optimizing and economically evaluating of different outdoors evaporative air coolers. The plan is composed of comprehensive studies by computer simulation and experimental verification for different designs of evaporative cooling systems. The aim of these studies is to find the optimum evaporative cooling system which has low initial cost and Long operation life, economical edge over other techniques, simplicity and low cost maintainability. The authors submitted a related patent to the US patent office.

5. Project No. IN090460

Principal Investigator: Dr. Mohamed El-Gebeily (Math)

Title: Boundary Conditions of Differential Operations Determined by Weak Formulations

Abstract

We propose to study the characterization of self-adjoint operators associated with the weak formulation second order singular (as well as regular) two point boundary value problems. Operators associated with this weak formulation are called Type I operators. The theory of these operators was recently studied by the proponents and the proposal was inspired in part by a question raised by an anonymous reviewer

6. Project No. IN090461

Principal Investigator: Dr. Magdi Mahmoud (SE)

Title: Switched Time-Delay Systems [Bookwriting Project]

Abstract

In many practical applications we deal with a wide class of dynamical systems that are comprised of a family of continuous-time or discrete-time subsystems and a rule orchestrating the switching between the subsystems. This class of systems is frequently called *switched system*. The motivation from investigating this class of systems is two fold: First, it has an inherent multi-modal behavior in the sense that several dynamical subsystems are required to describe their behavior which might depend on various environmental factors. Second, the methods of intelligent control systems are based on the idea of switching between different controllers. Looked at in this light, switched systems provide an integral framework to deal with complex system behaviors such as chaos and multiple limit cycles and gain more insights into powerful tools such as intelligent control, adaptive control and robust control. Switched systems have been investigated for a long time in the control and systems literature and have increasingly attracted more attention for the last three decades. The number of journal articles, books and conference papers have grown exponentially and a number of fundamental concepts and powerful tools have been developed. It has been pointed out that switched systems have been studied from various viewpoints. One viewpoint the switching signal is an exogenous variable, and then the problem is to investigate whether there exists a switching signal such that the switched system has desired performance including stability, certain disturbance attenuation level, and the like. Another viewpoint is that the switching signal is available to system designers and thus it may be used for control purposes. This book aims at integrating the main issues of switched systems in a systematic way. On the other hand, the existence of transfer phenomena, including material, energy and information, is an integral part of several physical and man-made systems. In turn, this gives rise to *delay* element and consequently, the overall system representation would be delay differential equations (DDEs) as opposed to the conventional ordinary differential equations (ODEs).

Over the years, it is recorded that DDEs are used in modeling other phenomena arising in different fields including biosciences (heredity in population dynamics), chemistry (behaviors in chemical kinetics), economics (dynamics of business cycles), engineering (water quality, hot and cold mills, vibration in cutting machines), to name a few. Time-delay systems (TDS) have a long-standing history and early treatment of DDEs dates back to the work of Bernoulli and

Condorcet. The development of mathematical theory for TDs however started in the second half of the 20th century by the pioneering work of Myshkis, Krasovskii, Halanay and Pinney in the frequency-domain and Bellman, Cooke and Hale in the time-domain. From a control systems standpoint, delays give rise to stabilizing/destabilizing effects depending on the situation under consideration. By now it is fair to say the fundamental results of the theory of functional differential equations (FDEs), as equivalent to DDEs), are well-known and well-understood. However, there are increasing number of applications involving large-scale systems exhibit the *delay* (transport, propagation, communication, decision) as a crucial parameter in the control analysis and design methods.

Recent approaches in *robust control* opened interesting perspectives and issues in dealing with delays in dynamical systems, where delays are eventually treated as *uncertainty*. Since most of the time delays have crucial impact on the plant performance, the employment of functional differential equations (FDEs) rather than ordinary differential equations (ODEs) in the modeling effort becomes the rule not the exception. Putting them together, a new class of system configuration readily emerges which, from now onwards; we call *switched time-delay systems (STDS)*. This class possesses the main ingredients of multi-modes of operation, nominally inherent time-delay model and parametric uncertainties and external disturbances. Indeed, this class reacts several important features on the performance analysis and control design and emphasizes the existence of a hybrid system: state-space delay dynamics and switching dynamics.

There are numerous applications that can cast in the framework of such STDS. Examples include, but not limited to, water quality control, electric power systems, productive manufacturing systems and cold steel rolling mills. For obvious reasons, STDS can best represented in the time-domain by a hybrid state-space formalism the major part of which is a state-space hereditary model and a switching model forming the remaining part. This book is about the recent advances in control analysis and design methodologies for such a new class of systems, STDs. It presents theoretical explorations on several fundamental problems for switched time-delay systems. By integrating fresh concepts and state-of-the-art results to form a systematic approach for the switching design and feedback control, a basic theoretical framework is formed towards a switched time-delay theory which not only extends the theory of time-delay systems, but also applies to more realistic problems.

In dealing with STDS, we follow a systematic modeling approach in that a convenient representation of the system state would be by observing an n th-dimensional vector at a particular instant of time and then examining the subsequent behavior. Looked at in this light, the primary objective of this book is to present an introductory, yet comprehensive, treatment of STDS by jointly combining the two fundamental attributes: the system dynamics possesses an inherent time-delay and the system behavior is managed by a switching signal. While each attribute has been examined individually in several texts, the integration of both attributes is quite unique and deserves special consideration. Additionally, STDS are nowadays receiving increasing attention by numerous investigators as evidenced by the number of articles appearing in journal and conference proceedings. The material contained in this book not only organized to focus on the new developments in the analysis and control methodologies for such STD systems, but it also integrates the impact of the delay factor on important issues like delay-dependent stability and control design. After an introductory chapter, it is intended to split the book into seven self-contained chapters with each chapter being equipped with illustrative examples, problems and questions. The book will be supplemented by an extended bibliography, appropriate appendices and indexes. It is planned while organizing the material

that this book would be appropriate for use either as graduate-level textbook in applied mathematics as well as different engineering disciplines (electrical, mechanical, civil, chemical, systems), a good volume for independent study or a reference for practicing engineers, interested readers, researchers and students.

7. Project No. IN090462

Principal Investigator: Dr. Ahmet Sahin (ME)

Co-Investigator: Dr. Bekir Sami Yilbas (ME)

Title: The Effect of Viscosity Variation in Thermodynamic Analysis of Fluid Flow

Abstract

A thermodynamic analysis is proposed to investigate the entropy generation for a fully developed turbulent viscous flow in a pipe subjected to various wall boundary conditions such as constant wall temperature and uniform wall heat flux. The temperature dependence on the viscosity will be taken into consideration in the analysis. The energy destruction (availability losses) due to entropy generation along a circular pipe carrying viscous fluid will be determined. The study is important for efficient operation in petrochemical and process industries.

8. Project No. IN090463

Principal Investigator: Dr. Yahya Al-Harhi (EE)

Title: Opportunistic Distributed Algorithms for Medium Access

Abstract

There is a high demand for high spectral efficiency techniques to improve the radio link performance and to better utilize the bandwidth. Traditionally, fading was looked at as a burden and many techniques have been developed to combat it. In the paper by Knopp & Humblet [2], they showed that the total uplink (mobile to base) capacity can be maximized by picking the user with the best channel to transmit, which means that the time-varying nature of the channel can be exploited in multiuser systems, therefore, the concept multiuser diversity was introduced. The study in [2] was extended to the downlink in [3] which showed that the same access scheme is valid also for the downlink case. In order to exploit the time-varying channel of the users, it is desirable for the transmitter and/or receiver to periodically obtain information on channel quality. In centralized systems, one way of accomplishing this task is by probing the channels of the users. Probing takes place by having the transmitter send control packets. Upon receiving a control packet, the user (receiver) feeds back a response packet that indicates the channel quality. In large networks with many users, the probing process can limit the performance of the system. In stead of such an approach, distributed scheduling algorithms are favored. Decentralized architecture is already employed in 802.11-based wireless networks. In this project we focus on distributed channel-aware medium access algorithms that are based on Aloha random access protocol. We address the issue of exploiting multiuser diversity in a random fashion. We propose a threshold based random access algorithm that optimize the aggregate throughput utility of the various users. In the case of logarithmic throughput utility (Proportional Fairness), we will show that the optimal threshold values may be found in a mostly distributed fashion. We also describe how the user-level performance may be evaluated by means of a Processor-Sharing model with state-dependent service rate. The Processor-Sharing model yields estimates for transfer delays, the number of active users, and user throughput. Moreover, we show how the above-mentioned distributed algorithm may be adapted to achieve packet-level stability with only limited

exchange of queue length information among the various users.

**9. Project No. IN090464 Principal Investigator: Dr. Akhtar Naqvi (Phys)
Co-Investigator #1: Dr. Dr. M.I. Al-Jarallah (Phys)
Co-Investigator #2: Dr. Anvarhusain Isab (Chem)
Co-Investigator #3: Dr. F.Z. Khiari (Phys)**

Title: Design and Test of a 14 MeV Neutrons Based Prompt Gamma Neutron Activation Analysis Set up to Determine H, C, N and O Elements Concentration in Bulk Samples with Low Atomic Number (Z)

Abstract

Nitrogen (N), Carbon (C), Oxygen(O) and Hydrogen (H) elements concentration measurements have very wide application. Particularly concentration of C, O, H and N is measured in low atomic number (Z) material for detection of contraband. C/O elemental ratio in the low Z sample is used to distinguish between contraband and innocuous material. Recently a measurement of C, N and O from explosive have shown that better agreement has been achieved between the experimental and calculated value of H/N elemental ratio and not C/ O elemental ratio, as was previously reported in earlier measurements. This showed the need to repeat the measurements of H/N elemental ratio in low Z elements. It is proposed to develop a 14 MeV neutrons based Prompt Gamma Neutron Activation Analysis (PGNAA) setup to measure N, C, O and H elements concentration in low Z material. Due to security reasons and material restrictions, measurements will not be carried with actual explosive and narcotics in this study. In this study those material will be studied which can be used in proxy for explosive and narcotics. Previously 2.6 MeV neutrons based PGNAA setup has already been successfully developed at King Fahd University of Petroleum and Minerals to measure concentration of silicon, iron, chlorine, sulfur and calcium in concrete samples. The proposed PGNAA setup will be built around the newly acquired KFUPM portable 14 MeV neutron generator because detection of N, C and O through PGNAA technique require neutron energies in excessive of 8.0 MeV. For detection of H element concentration, thermal neutrons are required, which can be produced through neutron moderator built around 14 MeV neutron generator. For detection of gamma rays, a LaBr(Ce) detector will be acquired. LaBr(Ce) detector has better energy resolution and higher efficiency than that of an equivalent size NaI detector. The facility will be tested by determining C, O, N, and H concentration in low Z bulk samples such as melamine, fertilizer, blue dye, coco bulk samples. . Initially Monte Carlo simulations will be carried out to calculate optimum geometry of the setup including experimental geometry, moderator size and detector as well as accelerator shielding. Parallel to experimental work prompt gamma ray yield of C, N, O, H and N will be calculated from the melamine, fertilizer, blue dye, coco bulk samples to determine the H/N, C/O and N/O ratios in the bulk samples. Finally, experimental results would be compared with the calibration curve of the facility. The results of the proposed study would be utilized in a subsequent study to design an accelerator based PGNAA system for the detection of contraband concealed in cargo containers.

**10. Project No. IN090465 Principal Investigator: Dr. Sasa Antonijevic (Chem)
Co-Investigator #1: Dr. Zain Hasan Yamani (Physics)**

Title: Probing Dynamics of Nanotubes: Water Molecules by ²H Solid-State NMR Spectroscopy

**11. Project No. IN090466 Principal Investigator: Dr. Salah U. Al-Dulaijan (CE)
 Co-Investigator #1: Dr. Mohammad Maslehuddin (CE)
 Co-Investigator #2: Dr. Mohammad M. Al-Zahrani (CE)**

Title: Performance Evaluation of Corrosion-Resistant Reinforcing Steel Bars-Service Life Prediction and Service Life Cost

Abstract

Reinforced concrete structures, both onshore and offshore, are exposed to corrosive conditions. It is advisable to adopt supplementary protection methods, such as applying corrosion inhibitors, coating steel and/or concrete, using fiber reinforced plastic bars etc., to protect these structures from deterioration, especially reinforcement corrosion. One of the supplementary protection methodologies is to utilize fusion-bonded epoxy-coated (FBEC) steel bars. However, under severe conditions, the service life of structures built with FBEC steel bars can be limited due to the detrimental effect of the damage and holidays to the coating. In such situations, the application of a metallic coating, such as zinc or chromium, may be required in order to assure the safety and serviceability of the structures. The objective of the proposed study is to evaluate the usefulness of stainless steel and stainless clad bars as compared to the mild steel and FBEC bars in enhancing the service life of reinforced concrete structures, under severe environments such as in the Arabian Gulf. The performance of a newly developed Z-bar (zinc coating overlaid by fusion bonded epoxy coating) would also be evaluated. The increase in the service life of the structures due to the use of stainless, stainless clad, Z-bar, and FBEC bars, vis-à-vis the increase in cost would also be studied. Reinforced concrete specimens would be prepared utilizing uncoated, FBEC, stainless steel and stainless clad steel bars. The relative service-life of structures with black, FBEC, stainless steel and stainless clad steel bars and Z-bars would be evaluated by measuring the rate of reinforcement corrosion at periodic intervals. The corrosion rate measurements would provide the time required for corrosion initiation of reinforcement corrosion and the rate at which the corrosion would proceed to an unacceptable level. Electrochemical potentiodynamic technique would also be utilized to kinetics of corrosion of the selected bars. The proposed study will be conducted over a period of 36 months at a cost of SR 245,000 (US \$ 65,333).

**12. Project No. IN090467 Principal Investigator: Dr. Mohammad Youssef (Mgt)
 Co-Investigator #1: Dr. Mohammad Al-Bureay (Mgt)
 Co-Investigator #2: Dr. Mourad Mansour (Mgt)**

Title: The Synergistic Impact of ISO 9000 and TQM on Product Quality, Inventory Turns and Time-Based Performance

Abstract

The quality management literature is fraught with empirical studies that test the individual impact of TQM and ISO 9000 on business performance. However, most of these studies fail to examine the synergistic impact of both programs on time-based and other business performance variables. This research project fills this void by examining the combined effect

of both ISO 9000 and TQM programs on a number of time-based variables. To achieve this goal, we postulate that companies that successfully integrated both ISO 9000 and TQM are more likely to outperform their counterpart that implemented either one of the two quality management programs. We operationalize the independent variables in our study in a unique way. Most of the existing studies operationalize the implementation of TQM, for example, as a zero-one variable. In this research project, we operationalize the implementation of TQM on a three-point continuum, with 1 referring to no implementation, 2: some implementation, and 3: extensive implementation and the ISO 9000 as a zero-one variable. In essence, we are interested in the extent to which TQM has been integrated with ISO 9000 and the combined impact of these two quality management programs on the operational performance of a manufacturing plant. The data for this project will come from two sources, using a questionnaire developed by Industryweek / Procewaterhouse. The first source of the data is manufacturing plants operating in the Kingdom of Saudi Arabia. The second source of the data is plants operating in three North America: U.S., Canada, and Mexico. The data from North American plants have already been collected, while the Saudi data will be collected using the same questionnaire. We use multivariate statistical procedures such as ANOVA, MANOVA, Factor, Cluster, and Discriminate analyses to test our main hypothesis. Findings of this study will have much implication for companies that impark on implementing quality management programs.

13. Project No. IN090468 Principal Investigator: Dr. Asad Sadi (MBA)

Title: Barriers Towards Business Entrepreneurship: A Focus on Saudi Arabia and Bahraini Businesswomen

Abstract

The purpose of this study is to investigate the barriers that exist among Saudi Arabian and Bahraini business women when starting and running their own enterprises, in contrast to other countries. The study will also explore issues relating to the motivations about start-up and running the business enterprises among Saudi Arabian and Bahraini women. Literature will be reviewed from both the theoretical and empirical perspectives and hypotheses will be developed on that basis. The survey questionnaire on women entrepreneurs from the project “Women in Business and in Decision-Making” in Europe (2004) will be utilized to structure the survey questionnaire for this study. The hypotheses will be empirically tested using a questionnaire on a sample taken from both Saudi businesswomen and businessmen and Bahraini businesswomen and businessmen. The results of this study will provide evidence about the factors that prominently motivate Saudi women and Bahraini women to start and run their own enterprise.

**14. Project No. IN090469 Principal Investigator: Dr. Wael Ahmed (ME)
 Co-Investigator #1: Dr. Meamer El Nakla (ME)
 Co-Investigator #2: Dr. Luai Al-Hadrami (ME)
 Co-Investigator #3: Dr. Abdul Salam Al-Sarkhi (ME)**

Title: Experimental and Analytical Investigations of Flow Accelerated Corrosion Under Multi-Phase Flow Conditions

Abstract

The overall objective of the proposed study is to investigate the flow structures in piping systems, especially those downstream flow orifices and elicit the flow mechanisms responsible for Flow Accelerated Corrosion (FAC). In addition to developing a CFD model for the flow parameters downstream of the flow orifices, experiments will be performed for different orifice diameters for a range of Reynolds numbers and inlet two-phase flow regimes. The two-phase flow will be characterized by measuring the void fraction, and flow patterns using capacitance sensors and high-speed video camera. A robust technique for measuring the wear rates will be developed, and related to the flow and wall shear stress. The proposed work is considered to be a leading-edge worldwide research toward understanding the hydrodynamic effect on FAC. The outcome of this project will benefit two major industries in the Kingdom of Saudi Arabia: power generation and oil production. It will be also considered an important step in a longer term effort to establish multi-phase flow capabilities at KFUPM that can be utilized in order to perform a high quality research in supporting the Kingdom of Saudi Arabia's industries.

**15. Project No. IN090470 Principal Author: Dr. Abdulrahman Al-Arfaj (Chem)
Co-Author: Dr. Mohammad Nahid Siddiqui (Chem)**

Title: Problem Solving for Freshman Chemistry I [Bookwriting Project]

Abstract

The use of the step-wise methods as a preparation for the important examinations is considered to be an excellent tool for understanding and solving freshman chemistry problems. It is being used in almost all US, Canadian and European Universities since many years. The step-wise problem solving method will be very useful tool to deal with chemistry fever of freshman students. Since step-wise methods will focus chiefly with each step to be understood in solving any easy or difficult problems, therefore it will boost students' confidence and level of knowledge as well. The step-wise problem solving method appealed to many students and instructors in freshman chemistry. The co-author has used this method in his quizzes and several requests were made by the students for providing more comprehensive material covering all chapters of CHEM 101. The contents of the proposed book will include questions from exercises, quizzes and exams covering almost all the concepts involved in the chapters. This idea stemmed from the collection of quizzes and exams by both authors and other faculty members also. This supplementary book will be for freshman chemistry students (CHEM 101) but the work will be extended in the form of another book for CHEM 102 as well.

**16. Project No. IN090471 Principal Investigator: Dr. Abdulaziz Al-Saadi (Chem)
Co-Investigator: Dr. Nissar Ullah (Chem)**

Title: Conformational Properties and Vibrational Assignments of 2-methoxyresorcinol and 4,6-Dihalo-resorcinols: Experimental and ab initio study

Abstract

The objective of this proposal is to synthesize important resorcinol derivatives, namely 2-methoxyresorcinol and 4,6-dihalo-resorcinols, and to study their infrared and Raman spectra

by using experimental and computational techniques. The methoxy- and halogen-containing derivatives of resorcinol and phenol are of enormous significance being a pharmacophore of bioactive pharmaceuticals. For example, 4,6-dihalo resorcinol named pestalone has shown potent antibacterial activity against *Staphylococcus aureus* and *Enterococcus faecium* whereas ambigol A, a resorcinol derived halogenated natural product, is the HIV reverse transcriptase inhibitor. To attain better understanding of the structural and spectral aspects of 4,6-dihalo- and 2-methoxyresorcinols, they will be investigated using the density functional theory (DFT) method with the hybrid B3LYP functional and ab initio quantum mechanical Møller-Plesset calculations of the second order (MP2) and possibly higher orders (MP3 and MP4). The effect of fluorine, chlorine, bromine and iodine substituents on the energetics and spectral features of resorcinol will be investigated. The conformational properties of the methoxy group between the two resorcinolic hydroxyl groups will be also studied. The structures of these compounds in their low-energy rotamers and the transition states will be fully optimized. Experimental IR and Raman of resorcinol, 2-methoxyresorcinol and 4,6-dihaloresorcinols (halogen atoms are chlorine, bromine and/or iodine) will be collected. Theoretical results will be combined with experimental infrared and Raman data to provide reliable assignments of the vibrational fundamentals of these resorcinol molecules.

17. Project No. IN090472 Principal Investigator: Dr. Mohd. Maslehuddin (CE)
Co-Investigator #1: Dr. Luai Al-Hadrami (ME)
Co-Investigator #2: Dr. Salah Al-Dulaijan (CE)

Title: Evaluation of Mechanical Properties and Durability of Electric Arc Furnace Slag aggregate Concrete

The marginal quality of the crushed limestone aggregates in the coastal areas of the Arabian Gulf is partly responsible for the low durability of concrete structures in this region. In such a situation, good quality aggregates are imported from other regions for strategic structures. The electric furnace slag (EAFS) aggregates, produced during the reduction of steel in an electric arc furnace, are dense and could be utilized for the production of high quality concrete. It is proposed to investigate the possibility of producing high quality concrete utilizing EAFS aggregates. The mechanical, thermal and radiation shielding properties of EAFS aggregates would be determined. Additionally, the durability of EAFS aggregates would also be evaluated. The data developed in the proposed study would provide indication on the possible avenues of use of the EAFS aggregate concrete. The use of EAFS aggregates would lead to the beneficial utilization of an industrial waste product and also conserve precious and fast diminishing sources of limestone aggregates.

18. Project No. IN090473 Principal Investigator: Dr. Meamer El Nakla (ME)
Co-Investigator #1: Dr. Wael Ahmed (ME)
Co-Investigator #2: Dr. Abdelsalam Al-Sarkhi

Title: Experimental and analytical study of Micro Grooved Heat Pipe Enhancement Using Carbon Nanotubes

Abstract

The objective of the proposed investigation is to develop and verify a mathematical model to

predict the performance of micro-V-shape-grooved heat pipe with water based carbon nanotubes as working fluid. Micro-grooved heat pipes are passive, closed multi-phase heat transfer devices that circulate the working fluid using the capillary effect of the micro-grooves, and thus don't require an external pump to drive the flow. Heat pipes are currently used for cooling an increasing number of industrial processes and commercial products. With the increasing heat flux requirements and thermal constraints in many applications, including electric power generation, environmental control (air-conditioners and dehumidifiers), electronics, molding, aerospace and automotive sectors, there is increased interest in using heat pipes because they can provide an order of magnitude higher heat transfer coefficients than other passive systems and even many single-phase forced convection systems. The proposed work is scheduled to be performed in two phases which are (i) mathematical modeling of the heat transfer processes and fluid flow, and (ii) an experimental set-up to verify the model and to establish an educational and research seed in the multi-phase heat transfer at KFUPM.

19. Project No. IN090474 Principal Investigador: Dr. Moustafa El-Shafei (SE)

Title: Modern Distributed Computer Control Systems [Bookwriting project]

Distributed Computer Control System is a combination of hardware (I/O field instruments, terminal panels, computer subsystems, and operator stations, etc.), networks (network topology, protocols, gateways, data access control, etc.), and software (monitoring, reporting, and control). The computer subsystems modules are in fact intelligent microprocessor-based boards where the control functions are embedded. Normal control functions of an entire plant or a process are thus distributed among a large number of these local control modules. The local control modules communicate with the other units in the system in a variety of data communication highways. Distributed Control Systems (DCSs) are dedicated systems used to control manufacturing processes that are continuous or batch-oriented, such as oil refining, petrochemicals, power generation stations, pharmaceuticals, food & beverage manufacturing, cement production, steelmaking, and papermaking. DCSs are connected to the sensors and actuators in the plant, and use setpoint control to control/regulate the flow/properties of material through the plant.

The fast pace of the advancement of the technologies involved in the DCS demands from the control and instrumentation professionals and process engineers to be proficient in the highly complex and fast-moving areas of computer hardware and software, and to cope with the developments in their own field. This book is intended to be an up-to-date reference source for professionals or text for graduate and postgraduate students. It provides information to assist the designers, users and maintenance staff of DCS in understanding how these systems function, and addresses important issues in the design, implementation, and operation of DCS systems. The book updates the readers on the recent technological developments, future directions, and the recently established standards related to the engineering and operations of DCS.

Part of the material of this book was first developed and taught at a regularly-offered undergraduate level course titled "Instrumentation for process industry", when a need arose to introduce the technology of industrial high speed serial communications, field buses, DCS systems, and to clarify the differences between PLCs and DCS system. Then, a graduate course was developed and taught on "Distributed Computer Control Systems", where students need to know real-time control environment, reliable computer hardware, computer

networks, fieldbus technology, OPC, and safety instrumentation systems. Teaching at the graduate level, with many part-time students having considerable field experience in Oil and Petrochemical industries, was very helpful to focus on the real need of practicing professionals and in determining the direction of this book. In particular, the chapters covering the issues of DCS safety and security were lastly added based on the real need of the practicing control and instrumentation engineers.

The book thus serves as a reference volume for a variety of engineers and professionals engaged in planning, design, and application of distributed computer control systems (DCCS) to new or existing process control system, and a good panorama of DCCS know how which will be useful to persons who are new or involved in the operation of DCCS systems. The book consists (tentatively) of 14 chapters. Chapter 1 is a general introduction, chapter 2 is the most important chapter, it explains the main functions and components of a DCCS system, explains the difference between a DCCS system and a SCADA system, and discusses the relation between the DCCS system and the plant wide network. Chapter 3 is a review of how sensors and actuators are connected to the DCS systems and briefly introduces signal conditioning and A/D and D/A conversion. Chapter 4 covers in detail the connectivity of the computer at the board level, at the cabinet level, and at the peripheral level. Chapters 5 and 6 cover computer networks and internet with sufficient details. Chapter 7 gives an overview of the most common field buses in the industry. Chapter 8 is dedicated to cover the emerging wireless technology and introduces the SP100 standard for wireless instrumentation and control. Chapter 9 introduces OPC as the most prevailing open standard for interconnectivity between heterogeneous control components. Chapter 10 and 11 cover the safety and security issues of DCS system. Chapter 12 is dedicated to provide an overview of the software of the DCS systems, starting from real-time operating systems, to Human Machine Interface and standards, basic control systems, Alarm managements, and other applications as asset management, condition-based maintenance, simulators, and advanced process control applications. Finally, in Chapter 14 we provide a brief survey of the popular large scale DCS for the process industries.

20. Project No. IN090475 Principal Investigator: Dr. Shariefuddin Pirzada (CASS)
Co-Investigator #1: Dr. Abdul Aziz Assaf (CASS)
Co-Investigator #2: Dr. Koko K. Kaybi (CASS)

Title: Imbalance Sequences in Digraphs

Abstract

The study of various types of sequences in graphs and digraphs has always remained an active part of research in graph theory, mainly because of their combinatorial nature, which in fact find various applications in different areas. One such is the concept of imbalance sequences in digraphs, imbalances being integers attached to the vertices of digraphs. We extend the theory of imbalances to larger families of digraphs, like multidigraphs and multipartite multidigraphs. We attempt to obtain necessary and sufficient conditions for the sequence of integers to be the imbalance sequences of some digraphs. Of course these criterions will be existence, constructive and combinatorial in nature. Further we study the concept of imbalance sets in these digraphs and we aim to obtain algorithms for their constructions.

21. Project No. IN090476 Principal Investigator: Dr. Yagoub Al-Nasser (ME)

Co-Investigator: Dr. Muhammad Al-Hawwa (ME)

Title: Wave scattering at a tapered free end of an elastic plate

Abstract

Elastic wave scattering at the free tapered end of an elastic plate due to an incident monochromatic wave is investigated. The tapered end may have a truncation to represent a broken tip. The governing equations are based on a semi-analytical model, which are solved to satisfy traction-free end conditions to determine all propagating waves and end modes for the plate. The amplitudes of the traveling waves and end modes are the basis for representing the wave reflection phenomenon at the free end. The end scattering spectra can be utilized to nondestructively evaluate the conditions of the plate.

22. Project No. IN090477

Principal Investigator: Dr. Mihai Halic (Math)

Title: Semi-stable vector bundles over fibred varieties

Abstract

The (semi-)stability concept for vector bundles has been introduced by Mumford in [7] in the early 1960s, and generalized by Takemoto in [9,10]. Since that time, the study of the properties of the moduli spaces of vector bundles over varieties, especially the cohomological ones, became an important and powerful tool for producing differential-geometric invariants. Most of the available, concrete examples are available either in low dimensions (especially real dimensions two and four), or on higher dimensional varieties of very special type. Therefore it is interesting to develop methods for constructing stable vector bundles over higher dimensional bases. Starting out with two varieties B and F , and may build new varieties Y which come with a projection $\pi : Y \rightarrow B$, with typical fibre F (bred varieties for short). The goal of this proposal is to develop a construction of stable vector bundles over bred varieties obtained in this way.

23. Project No. IN090478

Principal Investigator: Dr. Tarek Sheltami (COE)

Title: Wireless Sensor Networks in the e-Society

Abstract

Wireless sensor networks (WSN) promise to bring low cost, large scale advanced remote monitoring and automation applications to many daily activities. In addition to lowering upfront costs and reducing operating expenses, WSN provides improved reliability, increased installation flexibility, and scalability to sensor networks. It also makes numerous monitoring applications feasible that were previously not possible due to remote and hazardous environments. Wireless sensor networks (WSN) and their applications have grown steadily during the past decade as a result of the convergence of various technologies spanning wireless, data processing algorithms, computing hardware, storage, and sensor capabilities. The pervasive nature of static and mobile sensors scattered throughout the environment enables multi-resolution capture of environmental information that serve as the basis for knowledge acquisition, management and decision-makings. Information processing for sensor networks enables new capabilities to operate autonomously and perceive and adaptively react

to their environments. Large scale sensor networks are now being used in a number of Earth and Space Science applications, including large-area terrestrial systems for geologic monitoring, volcano/plume monitoring, seismic monitoring, large-scale ocean monitoring for tsunamis, storm surges, plumes, algae blooms, and weather forecasting systems comprised of aerial and ground/coastal nodes. In the near future, it is expected that WSNs and RFIDs will be ubiquitous in many application environments such as medical monitoring for in/out-patients, airports and transportations. The proposed project aims to design and implement a smart wireless sensor network for medical and environmental applications. The implemented architecture should support real-time and/or highly critical sensor information for unicast and multicast. Also it should reduce power consumption by improved power aware algorithms and protocols to enable design of smaller, lighter and longer living sensors and mobile units.

24. Project No. IN090479

Principal Investigator: Dr. Ashraf Elazouni (CEM)

Title: Simulation Approach for Scheduling Based on Fund Availability for Sustained Saudi Contracting Business

Abstract

Construction Scheduling is the process of devising schemes for sequencing activities. An executable schedule fulfills the real concerns of users, thus minimizes the chances of schedule failure. The minimization of total project duration has been the concept underlying CPM schedules. Subsequently, techniques including resource management and time-cost trade-off analysis were developed to customize CPM schedules in order to fulfill users' concerns regarding project resources, cost, and time. However, financing construction activities throughout the course of the project is another crucial concern that must be properly treated, otherwise, non-executable schedules are possibly rendered. Unless contractors manage to procure adequate cash to keep construction work run according to schedule, the pace of work will definitely be relaxed. Therefore, making the expenditures of the scheduled activities always in balance with the available cash has a potential contribution to producing executable schedules. Contractors procure cash through establishing credit-line accounts with bankers who allow contractors to withdraw cash up to certain credit limits. This proposal introduces evolutionary and heuristic algorithms to produce financially feasible schedules that balance the expenditures of activities at any period with the credit limit. The proposed methods offers twofold benefits of minimizing total project duration and fulfilling finance availability constraints.

25. Project No. IN090480

Principal Investigator: Dr. Mohd Aslam Chaudhry (Math)

Title: Extension of Ramanujan's Interpolation Formula and Applications of his Master Theorem

Abstract

We believe that Ramanujan's interpolation formula is a special case of a result that could be applicable to a variety of new cases leading to new identities involving special functions of engineering and applied mathematics. Secondly, Ramanujan's Master Theorem can further be exploited to develop new identities involving other Special Functions.

26. Project No. IN090481 Principal Investigator: Dr. Abdulsalam Al-Sarkhi (ME)
Co-Investigator #1: Dr. Meamer El Nakla (ME)
Co-Investigator #2: Dr. Wael Ahmed (ME)

Title: Effect of Drag Reducing Polymers in Multiphase Flow: Theoretical Approach

This research project will be investigating the possibility of using theoretical approach in quantifying the effect of drag reducing polymers in multiphase flow. All available investigations in the literature and within the oil industry are pure by experimental. No attempt has been made for using the available experimental data for getting correlations for the effect of drag reducing polymers in multiphase flow. Drag reduction and liquid hold up can be modeled using the combined momentum equation and some dimensional analysis schemes. The new approach will involve extensive literature search and collecting data bank for pressure drop and liquid hold up in multiphase flow under the influence of drag reducing additives (mainly drag reducing polymers). These data will be gathered from the published work and also by contacting several multiphase flow research groups around the world. In addition, the research project will conduct some experiments, if needed, in case of any needed missing data to fill any necessary gap. Experiments will be conducted at either KFUPM or Schlumberger research centre in Dhahran. The effect of the drag-reducing polymer additives on the pressure drop, liquid hold up and flow pattern in multiphase flow will be studied. Furthermore, the effect of the polymer additives on the stability of the multiphase flow pattern is going to be investigated. The success of this idea would likely extend the applications of such materials; and it will be very important for petroleum and petrochemical industries.

27. Project No. IN090482 Principal Investigator: Dr. Salem Alghamdi

Title: The impact of Globalization on Auto Car Business: Empirical Investigation on Saudi Consumers

Abstract

This research study examines the attitudes and perceptions of Saudi consumers on foreign automobiles. Global automobile brands from four countries: Honda (Japan), Volkswagen (Germany), Ford (USA), and Hyundai (Korea) were used for the study. Information from Saudi respondents on perception, attitude and intention shall be solicited to examine the fact that COO effect is a formidable determinant in purchase of a product. Nine attributes in purchase intentions of vehicles shall be used to solicit the Saudi consumer's inputs. Saudi Arabia is considered the largest car imports market in the Arab World.

28. Project No. IN090483

**Principal Investigator: Dr. Farag Azzedin
Co-Investigator: Dr. Sajjad Mahmoud (CS)**

Title: Trust Model for Context-Aware Systems: An Aspect-Oriented Approach

Abstract

Context-aware computing has gained a tremendous growth integrating a spectrum of devices and sensors exploiting the ever-increasing wireless communications. Context-aware computing environments are highly dynamic, open, heterogeneous, and unpredictable as the nodes have to deal with unknown and unseen situations. A solution is needed to nurture collaboration and encourage nodes in such environments to participate while preserving their safety. We argue that these nodes can not rely on current traditional trust solutions. A context-aware trust model must be considered. In this proposal, we discuss why trust is fundamental to context-aware environments and discuss the trust-related challenges brought by the notion of “context-aware computing”. Furthermore, we discuss why context is important with reference to trust. We propose to use aspect-oriented specifications to design a context-aware trust model. Finally, we evaluate our proposed approach using a case study.

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. Hanafy M. Omar Dr. Mohammad Abido (EE)	Optimal Design of Fuzzy-Based Guidance Law for Homing Noisy Measurements Using Multi-objectives Evolutionary Algorithms (AE/OPTIMAL/372)
Chemical Engineering	Dr. Usamah Al-Mubaiyedh	The Stability and Dynamics of Non-Isothermal Taylor-Coutte Flow: Influence of Viscous Heating, Buoyancy and Fluid Thermal Sensitivity (CHE/TAYLOR-LOW/262)
Chemical Engineering	Dr. Nadhir Al-Baghli	Photoxidation of MTBE in the Presence of Hydrogen Peroxide (CHE/MTBE/275)
Chemical Engineering	Dr. Saleem ur Rahman (Che) Dr. Ahmad Yamani (EE)	Development of Solid-Liquid Mass Transfer Probe Based on Limiting Diffusion Current: Application to Stirred Tanks (CHE/MASS/302)
Chemical Engineering	Dr. Ramazan Kahraman Dr. Saleem ur Rahman Dr. Mesfer Al-Zahrani (CE) Dr. Salah Al-Dulaijan (CE)	Corrosion Investigation of Stainless Steel and Stainless Steel Clad Reinforcing Bars (CHE/STEEL/ 320)
Chemical Engineering	Dr. Habib Al-Ali Dr. Habib Zughbi (Consultant)	Investigation of the Hydrodynamics of a Moving Bed Reactor. (CHE/MOVING BED/328)
Chemical Engineering	Dr. Saleem ur 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)

College / Department -----	Principal Investigator / Co-Investigator(s) -----	Title of the Project and its Code -----
Chemical Engineering	Dr. Javaid Z.M. Zaidi (Che) Dr. Ibnelwaleed Hussain (Che) Dr. Usamah Mubaiyedh (Che)	Separation of Binary Organics Mixtures Using Novel Composite Polymeric Membranes by Pervaporation (CHE/Binary/341)
Chemical Engineering	Dr. Ibnelwaleed Hussein, Dr. Basel F. Abu Sharkh, Dr. Muhammad Al-Arfaj, Dr. João B.P. Soares, Professor of Chemical Eng., University of Waterloo, Canada	Synthesis; Solution, Melt, and Solid-State Properties; and Modeling of Metallocene Polyolefins with Controlled Long Chain Branching (CHE/Metallocene/347)
Chemical Engineering	Dr. Mamdouh Al-Harthi	Mathematical Modeling of Living Radical Polymerization of Styrene Initiated By Epoxide-Radical Ring Opening (CHE/EPOXY/418)
Chemical Engineering	Dr. Muataz Ali Atieh	Production of Carbon Nanotubes (CNTs) by Using Fluidized Bed Chemical Vapor Disposition (FB-CVD) for Nanotechnology Application (CHE/VAPOR/449)
Civil Engineering	Dr. Ali Al-Gadhib	Numerical Simulation of the Evolved Physico-Chemical Distress in Concrete Repairs and Concrete Structures (Sabbatical Leave) (CE/CONCRETE/313)
Civil Engineering	Dr. M.H. Baluch Dr. Ali Al-Gadhib Dr. Ahmad S. Al-Gahtani Dr. M. Kalimur Rahman	Engineering Guidelines for Application and Design of Prestressed Precast Hollow Core Concrete Slabs Strengthened with CFRP Sheets (CE/Design/336)
Civil Engineering	Dr. Husain J. Al-Gahtani Dr. Faisal Fairag (Math)	Application of Radial Basis Functions to Incompressible Solids and Fluids (CE/IN080411)

College / Department -----	Principal Investigator / Co-Investigator(s) -----	Title of the Project and its Code -----
Civil Engineering	Dr. Nedal Ratrout	A Proposed Procedure for Determining Time-of-Delay (TOD) Breakpoints Using Clustering Technique under Local Traffic Conditions (CE/TRAFFIC/433)
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: Aggrégate Concrete [CE/ARC/472]
Electrical Engineering	Dr. A. Zerguine Dr. L. Cheded Dr. Asrar Sheikh	Performance Evaluation of a Soft Decision Based Least Mean Fourth (LMF) Algor-ithm: Applications to Wireless Communications (EE/LEAST-MEAN/327)
Electrical Engineering	Dr. Mohammad Landolsi Dr. Wajih Abu-Al-Saud Engr. Ahmad Abul-Hussain	Development of a Software-Defined Radio Platform for Communication System Design (EE/Platform/332)
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. Abdel-Aal Mantawy Dr. Mohammad H. Shwehdi Dr. Jamil Bakhawain	Distributed Generation Integration for Optimal Operation and Improved Performance of Distribution System (EE/Optimal/385)
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)

College / Department -----	Principal Investigator / Co-Investigator(s) -----	Title of the Project and its Code -----
Electrical Engineering	Dr. Mohammad Adnan Landolsi (EE) Dr. Aimen Al-Maleh (COE)	Design and Implementation of Interconnect-Efficient Low Density Partly Check Error Connecting Codes (EE/Density/376)
Electrical Engineering	Dr. M.H. Shwehdi Dr. Mohammad Gondal Mr. Umar Jauhar (EE)	Identifying the Causes of Low Voltage Cable Outages by Applying Explicit Measures and Laser Induced Breakdown Spectroscopy (LIBS) (EE/VOLTAGE/427)
Electrical Engineering	Dr. Yahya Al-Harthi	Opportunistic Distributed Algorithms for Medium Access (EE/Medium/463)
Mechanical Engineering	Dr. Amro Al-Qutub Dr. Mohammad Allam Mr. M. Abdul Samad	A Study on the Dry Sliding Wear of 6061 Al/Al ₂ O ₃ Particulate Reinforced Aluminum Alloys Against Automobile Brake Materials (ME/Sliding Wear/352)
Mechanical Engineering	Dr. Esmail Mokheimer Dr. Tarek Abdel-Galil Dr. Faleh Al-Sulaiman Dr. Tarek Abdel-Galil (Consultant)	Techno-Economic Feasibility Study for Implementing Efficient Air Conditioning Technologies for Local Manufacturers of small Central Air Conditioners (ME/AC Technology/350)
Mechanical Engineering	Dr. Numan Abu-Dhier Dr. Bekir Sami Yilbas	Quality Assessment and Metallurgical Examination of Laser Welded Sheets (ME/Laser/398)
Mechanical Engineering	Dr. Nesar Merah Dr. Zafarullah Khan and Dr. Abdulaziz Bazzoune	Natural and Accelerated Weathering Effect of Tensile and Impact Properties of CPVC Pipe Material (Release Time Proposal for the PI) (ME/Tensile/407)
Mechanical Engineering	Dr. Mohammad Hawwa	Ultrasonic Characterization of Inhomogeneous Cladded Plates (ME/Ultra/431)

College / Department -----	Principal Investigator / Co-Investigator(s) -----	Title of the Project and its Code -----
Mechanical Engineering	Dr. Mohammad Antar Dr. Rached Ben Mansour Dr. Salem Al-Dini	Fluid Flow and Heat Transfer Characteristics in a Varying Speed Lid-Driven Cavity (ME/CAVITY/428)
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. Abdesalam Al-Sarkhi Dr. Luai Al-Hadhrami	Study of Oil-Water Flows in a Horizontal Pipeline (ME/Oil-Water/448)
Mechanical Engineering	Dr. Mehmet Sunar Dr. Khalid Al-Dheyman	Analysis of Functionally Graded Thermopiezoelectro-Magnetic Materials (ME/MAGNET/451)
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. Wael Ahmed Dr. Meamer El Nakla Dr. Luai M. Al-Hadrami Dr. Abdul Salam Al-Sarkhi	Experimental and Analytical Investigations of Flow Accelerated Corrosion Under Multi-Phase Flow Conditions (ME/Flow/468)
Mechanical Engineering	Dr. Meamer El Nakla Dr. Wael Ahmed Dr. Abdelsalam Al-Sarkhi	Experimental and analytical study of micro grooved heat pipe enhancement using carbon Nanotubes [ME/Carbon/472]

College / Department -----	Principal Investigator / Co-Investigator(s) -----	Title of the Project and its Code -----
Mechanical Engineering	Dr. Yagoub Al-Nassar Dr. Mohammad Hawwa	Wave scattering at a tapered free end of an elastic plate (ME/wave/476)
Mechanical Engineering	Dr. Abdelsalam Al-Sarkhi Dr. Meamer El Nakla Dr. Wael Ahmed	Effect of Drag Reducing Polymers in Multiphase Flow: Theoretical Approach (ME/Drag/481)
Hafr-al-Batin Community College	Dr. Belloui Bouzid Dr. Mohammad Nazez Dr. Khan Hamdullah	Theoretical Modeling and Experimental Analysis of Novel and Efficient Erbium Fiber Laser (EDFL) and Erbium Doped Fiber Amplifier (HAFR/FIBER/429)
College of Comp. Sci. & Engg.		
Information & Computer Science	Dr. Mahmoud Elish	A Measurement Framework for Aspect-Oriented Systems (ICS/ASPECT/420)
Information & Computer Science	Dr. Wasfi Al-Khatib Dr. Sabri A. Mahmoud	Toward Content-Based Indexing and Retrieval of Arabic Manuscript (ICS/INDEX/325)
Information & Computer Science	Dr. Mohammad Al-Shayeb	Classification of Aspect Oriented Refactoring Methods Based on Software Quality Attributes (ICS/Aspect/446)
Information & Computer Science	Dr. M. Sarfraz Dr. Sabri A. Mahmoud	Toward Content-Based Indexing and Retrieval of Arabic Manuscript (ICS/Optical Test/337)
Information & Computer Science	Dr. Khaled Salah Dr. Mohammad Sqalli	Intelligent Firewall DoS Attacks and Countermeasures (ICS/Fire-Wall/361)
Information & Computer Science	Dr. Farag Azzedine	Reputation Assessment Process in Peer-to-Peer Systems (ICS/Peer/365)

College / Department -----	Principal Investigator / Co-Investigator(s) -----	Title of the Project and its Code -----
Information & Computer Science	Dr. Khaled Salah	Improving the Performance of Linux Networking Subsystem (ICS/Linux/383)
Information & Computer Science	Dr. Farag Azzedin	I/O Request Handling in Web Servers: Issues and Solutions (ICS/WEB/430)
Information & Computer Science	Dr. Farag Azzedin Dr. Sajjad Mahmoud	Trust Model for Context-Aware Systems: An Aspect-oriented Approach (ICS/Trust/483)
Computer Engineering	Dr. Muhammad El-Rabaa Dr. Abdelhafid Bouhraoua	Developing a Network-on-Chip for Field Programmable Gate Arrays (COE/GATE/367)
Computer Engineering	Dr. Aimen El-Maleh Dr. Ahmad Al-Yamani	Transistor-Level Defect Tolerant Digital System Design at the Nanoscale (COE/Nanoscale/387)
Computer Engineering	Dr. Mohamed F. Mudawar Dr. Abdelhafid Bouhraoua Dr. Abdul Rahim Nasser	The Design and Simulation of a Multicore Vector Processor (COE/IN080394)
Computer Engineering	Dr. Uthman Baroudi	Distributed Self-Healing Algorithms for Wireless Sensor and Actor Networks (COE/Sensor/437)
Computer Engineering	Dr. Tarek Sheltami	Wireless Sensor Networks in the e-Society (Release Time Project) (COE/Sensor/478)
Systems Engineering	Dr. Umar Al-Turki Dr. Shokri Z. Selim Dr. Abdulbasit Andijani	On Stochastic Single Machine Early-Tardy Scheduling SE/SCHEDULE/191
Systems Engineering	Dr. Malick Ndiaye	Locating Facilities with Various Distance Functions (SE/LOCATION/307)

College / Department -----	Principal Investigator / Co-Investigator(s) -----	Title of the Project and its Code -----
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. Muhammad Shafiq Dr. Fouad Al-Sunni	Adaptive Tracking of Non-Minimum Phase Discrete-Time Plants Using Inverses of Signals (SE/DISCRETE TIME/323)
Systems Engineering	Dr. Mohammad Ben Daya Dr. Salih Duffuaa Dr. Abdul Raouf	Maintenance Engineering and Management (Book Editing Project) (SE/Maint.Mgt/331)
Systems Engineering	Dr. Chawki Fedjki Dr. Salih Duffuaa	Heuristics for QAP Using a Characterization of a B-Local Star Minimum (IN080391)
Systems Engineering	Dr. Magdi Mahmoud and Dr. Fouad Alsunni	Improved Stabilization Methods for Dynamical Systems with State- and Input Delays (SE/Stabilization/404)
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. Magdi Mahmoud and	Switched Time-Delay Systems [Bookwriting Project] (SE/Stabilization/461)
Systems Engineering	Dr. Moustafa El-Shafei	Modern Distributed Computer Control Systems (SE/Control/474)
College of Industrial Management	Dr. Haider Madani	An Industry-Experience Leave at the World Bank: Learning About the Role of Auditing in Enforcing Compliance to Effective Accounting Disclosure and Corporate Governance (CIM/AUDIT/425)
Accounting & MIS		

College / Department -----		Principal Investigator / Co-Investigator(s) -----	Title of the Project and its Code -----
Accounting & MIS		Dr. Mustafa Eid Dr. Salem Al-Ghamdi Dr. Mohammad Al-Ahmadi	A Conceptual IT-Based Model for Collaborative Research (ACT/IT-Model/363)
Department Management Marketing	of &	Dr. Alhassan Abdulmuhmin Mr. Irfran Ilyas (Mgt & Mkt)	Awareness, Adoption and Maturity Level of Customer Relationship Management (CRM) Practices in Saudi Companies (CIM/Customer/338)
Department Management Marketing	of &	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 Management Marketing	of &	Dr. Asad M. Sadi Dr. Salem Al-Ghamdi	Franchising a Gizmo for Small-Medium Sized Enterprises (SME) Development in Industrialized Economies: A Saudi Arabian Investigation (MGT/Gizmo/366)
Department Management Marketing	of &	Dr. Mourad Mansour Dr. Mustapha Achoui	Gender and Job Satisfaction among Employees in Saudi Arabia (MGT/Gender/381)
Department Management Marketing	of &	Dr. Roland Yeo Dr. Mohammad Youssef	Knowledge Sharing Behavior in Organizational Contexts: The Case of Saudi Arabia (CIM/KNOWLEDGE/443)
Department Management Marketing	of &	Dr. Mohammad Youssef Dr. Roland Yeo	A Structural Equation Modeling Approach to Study the Factors that Influence Customers' Intention to Adopt Internet Banking in Saudi Arabia (CIM/INTERNET/452)
Department of Management & Marketing		Dr. M. Sadiq Sohail	Marketing Strategy, Related Factors and Performance of Firms in Saudi Arabia: An Examination of Their Relationships (CIM/IN080409)

College / Department -----	Principal Investigator / Co-Investigator(s) -----	Title of the Project and its Code -----
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. Sadiq Sohail Dr. Obaid Al-Shuraidah	The Influence of Product Modularity on Competitive Performance: An Empirical Investigation (CIM/EMPIRICAL/440)
Department of Management & Marketing	Dr. Mohammad Youssef Dr. Mohammad Al-Bureay Dr. Mourad Mansour	The Synergistic Impact of ISO 9000 and TQM on Product Quality, Inventory Turns and Time-Based Performance (CIM/SYNERGY/466)
Department of Management & Marketing	Dr. Mohammad Asad Sadi	Barriers Towards Business Entrepreneurship: A Focus on Saudi Arabia and Bahraini Businesswomen (CIM/Entrepreneurship/469)
Department of Management & Marketing	Dr. Salem Alghamdi	The impact of Globalization on Auto Car Business: Empirical Investigation on Saudi Consumers (CIM/Autocar/482)
Department of Finance & Economics	Dr. Mohammad Al-Sahlawi	An Alternative Oil Pricing Currency to Impact OPEC's Economies and the US Geopolitical Power (IM/OIL PRICING/424)
Chemistry	Dr. M. Fettouhi (Chem) Dr. Bassam El Ali (Chem) Dr. Khalil Ziq (Phys)	New Group 10 Metal Complexes Based on Chelate Ligands Bearing Nitroxide Radicals. Magnetic Properties and Catalytic Performance in Oxidation Reactions of Alcohols (CY/METAL/301)

College / Department -----	Principal Investigator / Co-Investigator(s) -----	Title of the Project and its Code -----
Chemistry	Dr. Mohammed A. Al-Daous (Chem)	Growth of Uniform Zeolite Layers on 3D Ordered Macroporous Anion Modified Zirconia: Synthesis, Characterization, and Catalytic Evaluation (CY/Zeolite/344)
Chemistry	Dr. Anvarhusain Isab Dr. Mohammad I.M. Wazeer (Chemistry)	Synthesis of Gold(III)-Diamines complexes and their Interactions with Biological Molecules Studies by solid and solution NMR (CY/GOLD/374)
Chemistry	Dr. Bassam El-Ali Dr. Jimoh Tijani (Chemistry)	Rhodium-Catalyzed one Pot Hydroformylation-Cyclization Reactions of Allybenzene Derivatives (CY/BENZENE/379)
Chemistry	Dr. Anvarhusain Isab Dr. Mohammad I.M. Wazeer (Chemistry)	Redox and Ligand Exchange Reaction of Gold(III) Cyanide and Gold(III) Seleno-Cyanide with Various Biologically Important Ligands (CY/LIGAND/421)
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-Dihaloresorcinols: Experimental and ab initio study [CY/AB-INITIO/471]
Chemistry	Dr. Abdulrahman Al-Arfaj Dr. M. Nahid Siddiqui	Problem of Solving for Freshman Chemistry I [CY/Problems/470]
Earth Sciences	Dr. Mohammad Makkawi	Groundwater Resources and Environmental Management: Industrial Experience in Modeling Groundwater Aquifers (ES/GROUND-WATER/290)

College / Department -----	Principal Investigator / Co-Investigator(s) -----	Title of the Project and its Code -----
Mathematical Sciences	Dr. Abdeslem Lyaghfour (Math)	On the Continuity of the Free Boundary in a Class of Elliptic Free Boundary Problems with Neumann Boundary Condition (MS/Neumann/333)
Mathematical Sciences	Dr. Jawad Abuihlail (Math) Mr. Mohammad Jarar (Math)	The Structure of Tilting Modules Over Commutative Rings (MS/Rings/351)
Mathematical Sciences	Dr. Abdulrahman Alshuaibi (Math)	Regularization and the Inverse Laplace Transform (Sabbatical leave proposal) (Host Institute: University of West Georgia, USA) (MS/Laplace/354)
Mathematical Sciences	Dr. Said Berrimi (DCC) Dr. Salim Messaoudi	Study of Decay in Some Thermoelastic Systems (MS-DCC/Decay/360)
Mathematical Sciences	Dr. Ibrahim Rahimov (Math) Dr. Mohammad Omar (Math) and Mr. Musawar Malik (Math)	Investigation of the Validity of the Bootstrap in a Non-Homogeneous Branching Stochastic Process (MS/Bootstrap/396)
Mathematical Sciences	Dr. Mohammad Tahir Mustafa and Dr. Hasan Azad (Math)	Group Classification Optimal System and Optimal Symmetry Reductions of a Class of Klein-Gordon Equations (MS/Gordon/397)
Mathematics & Statistics	Dr. Salim Messaoudi	General Decay in Some Timoshenko-type Systems (MS/Decay/408)
Mathematics & Statistics	Dr. Steven Binns	Algorithmic Complexity and Effectivity Closed Classes (MS/IN080410)
Mathematics & Statistics	Dr. Hassen Muttlak Dr. Farah Saleh Mr. Abu-Jiya	Stein-Type Estimation Using Replicated Ranked Set Sampling (MS/STEIN/413)

College / Department -----	Principal Investigator / Co-Investigator(s) -----	Title of the Project and its Code -----
Mathematics & Statistics	Dr. Mohammad Halic	Strong Exceptional Sequences of Vector Bundles Over a Certain Class of Fano Varieties (MS/VECTOR/414)
Mathematics & Statistics	Dr. Nasser-eddine Tatar	Uniform Stabilization of Timoshenko-Beams by Thermal Effect (MS/BEAMS/417)
Mathematics & Statistics	Dr. Rajai Alassar	Heat Conduction from Two Spheres (MS/HEAT/419)
Mathematics & Statistics	Dr. A. Mimouni	Compact and Coprime Packedness and Star Operations (MS/STAR/436)
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. Salim Messaoudi (Mathematics & Statistics)	General Boundary Stabilization in Thermo-Elasticity (MS/BOUNDARY/445)
Mathematics & Statistics	Dr. Assane Lo	Decay of Correlations for Certain Classical Unbounded Models (MS/DECAY/442)
Mathematics & Statistics	Dr. Mihai Halic	Semi-stable vector bundles over Fibred varieties (MS/Vector/477)
Mathematics & Statistics	Dr. Mohammad Aslam Chaudhry	Extension of Ramanujan's Interpolation Formula and Applications of His Master Theorem (MS/Ramanujan/480)
Physics	Dr. S.M. Al-Amoudi Dr. H. Bahlouli	Real-Time Dynamics of Bose-Einstein Condensates (PH/BOSE/241)

College / Department -----	Principal Investigator / Co-Investigator(s) -----	Title of the Project and its Code -----
Physics	Dr. Abdullah Alsunaidi (Phys) Dr. Basel Abu Sharkh (Che)	Self-Assembly in Confined Semiflexible Copolymers (PH/COPOLYMERS/268)
Physics	Dr. Mohammad Al-Kuhaili Dr. S.M.A. Durrani Dr. E.E. Khawaja (Consultant)	Development of a New Method for Determining the Optical Constants (n and k) of Thin Inhomogeneous Films (PH/OPTICAL/286)
Physics	Dr. M.I. Al-Jarallah	Radon Gas and Radiation Dangers (Sabbatical leave to write a book) (PH/RADON GAS/315)
Physics	Dr. Nouar Tabet Dr. A. Mekki Dr. K. Mezghani (Mech Engg.)	DC-Magnetron Sputtering Synthesis and Characterization of the Physical Properties of Zinc Oxide Thin Films (PH/DC-MAGNETRON/299)
Physics	Dr. A.A. Naqvi (Phys) Dr.M.M. Nagadi (Phys) Dr. Omar Al-Amoudi (CE) Dr. M. Maslehuddin (RI)	Measurement of Chloride Concentration in Silica Fume and Fly Ash Cement Concretes Using PGNAA Technique (PH/FLY ASH/305)
Physics	Dr. A.K. Aksoy (Physics) Mr. Mohammad Raashid (Physics)	Enhancement of 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 Dr. Abdullah Alsunaidi	Magnetic Properties of ZnO-TM Semiconductor (PH/Magnetic/364)
Physics		Dynamics and Morphology of Phase Separating Liquid-Crystal/Polymer Blends (PH/Crystal/382)
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)

College / Department -----	Principal Investigator / Co-Investigator(s) -----	Title of the Project and its Code -----
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. Abdullah Al-Sunaidi	Adsorption and Dissociation of Hydrogen Sulfide (H ₂ S) on Functionalized ZnO Nanoparticles and Nanotubes : A Computational Study (PH/NANO/435)
Physics	Dr. Akhtar Naqvi (Phys) Dr. M.I. Al-Jarallah (Phys) Dr. Anvarhusain Isab (Chem) Dr. F.Z. Khiari (Phys) Mr. Khateeb-ur-Rahman, Mr. Rashid Mohammad, and Mr. Azad-ul-Islam 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	Design and Test of a 14 MeV Neutrons Based Prompt Gamma Neutron Activation Analysis Set up to Determine H, C, N and O Elements Concentration in Bulk Samples with Low Atomic Number (Z) (PH/Neutron/464) Automatic Voice Identification of Arabic Poetry Meters (IAS/POETRY/426)
Islamic & Arabic Studies Department		
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)
Architectural Engineering Department	Dr. Ismail Budaiwi Dr. Adel Abdou Dr. Maatouk Khoukhi	The Impact of Moisture Content on the Thermal Conductivity of Fibrous Insulation Materials (IN080390)

College / Department	Principal Investigator / Co-Investigator(s)	Title of the Project and its Code
City & Regional Planning	Dr. Adel Aldosary Mr. Khan Mohammad Nahiduzzaman Dr. Ali Al-Naser	Socio-Cultural Analysis of Third Places Through GIS: A Case Study of Al-Khobar (CRP/GIS/432)
Construction Engineering & 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 & Management	Dr. Ashraf El-Azouni (CEM)	Simulation Approach for Scheduling Based on Fund Availability for Sustained Saudi Contracting Business (CEM/Schedule/479)
Architecture Department	Dr. Hamoud Dehwah (ARE) Dr. Mohd. Maslehuddin (RI) Dr. Omar B. Al-Amoudi (CE)	Optimization of Mix Design and Durability of Self-Compacted Concrete (ARE/Concrete/343)
College of Applied and Supporting Studies	Dr. Shariefuddin Peerzada Dr. Abdulaziz Al-Assaf Dr. Koko Kaybi	Imbalance Sequence in Digraphs (CASS/Digraphs/475]

**4. RESEARCH PROPOSALS SUBMITTED DURING
THE SPRING SEMESTER 2008-2009 UNDER REVIEW**

Sr. No.	Project Code	Principal Investigator	Project Title
1.	IP/2009-39	Dr. Mohamed El-Gebeily	Boundary Conditions of Differential Operators Determined by Weak Formulation
2.	IP/2009-40	Dr. Abdulrahman Al-Arfaj	Problem Solving for Freshman Chemistry I (Bookwriting Proposal)
3.	IP/2009-41	Dr. Abdelsalam sarkhi	Effect of drag reducing polymers in multiphase flow: theoretical approach
4.	IP/2009-42	Dr. Mubarak Al-Mutairi	Information and Communication Technologies (ICT) (Bookwriting Proposal)
5.	IP/2009-43	Dr. Weal Ahmed	Experimental and Analytical Investigations of Flow Accelerated Corrosion under Multi-phase Flow Conditions
6.	IP/2009-44	Dr. Meamer	Experimental and analytical study of micro grooved heat pipe enhancement using carbon nanotube
7.	IP/2009-45	Dr. Shwehdi	Lightning arrestors and insulation coordination to mitigate pole mounted transformers (PMT) failures in Saudi electric company south operating
8,	IP/2009-46	Dr. Ahmad Z. Al-Garni	Outdoors Economic Cooling System
9.	IP/2009-47	Dr. Abdulaziz Al-Saadi	Conformational Properties and Vibrational Assignments of 2-methoxyresorcinol and 4,6-Dihaloeresorcinols: Experimental and ab initio Study
10.	IP/2009-48	Dr. Aslam Chaudhry	Extension of Ramanujans interpolation formula and applications of his master theorem
11.	IP/2009-49	Dr. Farag Azzedin	Trust model for context-aware systems: an aspect-oriented approach
12.	IP/2009-50	Dr. Aslam Chaudhry	Inference for the location and shape parameters of Chaudhry and Ahmad's Diameter distribution
13.	IP 2009/51	Dr. Tarek Sheltami	Wireless sensor networks in the e-society (Release Time Proposal)
14.	IP 2009/52	Dr. Muhammad Asad Sadi	Barriers towards business entrepreneurship: A focus on Saudi Arabia and Bahraini Businesswomen
15	IP 2009/53	Dr. Mohammad Maslehuddin	Evaluation of Mechanical Properties and Durability of Electric Arc Furnace Slag Aggregate Concrete
16	IP 2009/54	Dr. Shariefuddin Parzada	Imbalance Sequence in Digraphs
17	IP 2009/55	Dr. Eid Al-Mutairi	Design of Flexile heat exchange networks

			considering variable feed properties
18	IP 2009/56	Dr. Lahouri Ghouti	Seismic Data compression and denoising using state of the art multiresolution analysis
19	IP 2009/57	Dr. Talat Ulussever	Analysis of Foreign-Owned Bank Entry in Saudi Arabia
20	IP 2009/58	Dr. Salem M. Al- Ghamdi	Impact of Globalization on Auto Car Business
21	IP 2009/59	Dr. Ashraf M. Elazouni	Simulation Approach For Scheduling Based On Fund Availability For Sustained Saudi Contracting Business
22	IP 2009/60	Dr. Mihai Halic	Semi-stable vector bundles over bred varieties
23	IP 2009/61	Dr. Mohamed A. Youssef	The Synergistic Impact of ISO 9000 and TQM on Product Quality, Inventory Turns and Time-Based Performance

**5. JUNIOR FACULTY GRANTS PROPOSALS RECEIVED
IN SPRING SEMESTER 2008-09 WHICH ARE UNDER REVIEW**

Project Code	Principal Investigator	PI Department.	Consultant	Project Title
JP 2009/13	Dr. Naseer-Al-Aqeeli	ME	Prof Yilbas, ME	Characterization of TiN-Coated and Laser Gas Assisted Ti-6Al-4V Alloy
JP 2009/14	Dr. Eid Al-Mutairi	CHE	Dr. Mahmoud El-Halwagi, Chemical Engg. Dept., Texas A&M University, USA (Consultant)	Optimal and Flexible Heat Exchanger Network Design for Fluid Catalytic Cracking Process
JP 2009/15	Dr. Badr M. Abdullah	EE	None	An Illumination Source for Weld Monitoring Using Low-Cost Laser Diodes
JP 2009/16	Dr. Faizan Mysorewala	SE	Dr. Lahouari Cheded	Adaptive sampling for density estimation of space time field using mobile robots

6. SABBATICAL LEAVE PROPOSALS RECEIVED FOR 2009/2010

#	Name of Faculty	Department	Title of the Research Proposal
1	Dr. Mohammad S. Al-Qahtani	Mechanical Engineering	Sabbatical leave proposal entitled "Instructional Design and Authoring of Boiler's Reference Manual" Tailored to fit local and Petrochemical Industry in Saudi Arabia (Recently withdrawn)
2	Dr. Abdulrahman Howsawi	Islamic & Arabic Studies Department	Applied Studies for Quranic Verses that Have been Claimed to Create

**7. FAST TRACK PROPOSALS RECEIVED FOR FUNDING DURING
MARCH 2009 FOR FUNDING**

Project Code	Principal Investigator	PI Dept.	Co Investigator(s) / Dept.	Project Title
FT/2009-34	Dr. Muhammad Shariq Vohra	CE	Dr. Saleh Al-Suwaiyan	Removal of thiocyanate from simulated industrial waste water using photocatalysis: effect of co-pollutants
FT/2009-35	Dr. Abdulwahab Al-Kahtani	MGT MKT		Predictors of Managerial Values on Corporate Social Responsibility: An Empirical Study of Saudi Firms
FT/2009-36	Dr. Nisar Ullah	CHEM	--	The first total synthesis of Icmt inhibitors prenylated β -hydroxychalcones and spermatinamine, a new approach to anti-cancer drug discovery
FT/2009-37	Dr. Izhar Ahmad,	MATH	Dr. Suliman Al-Homidan and Mr. Shamsuddin Khan	Optimality Conditions and Duality for Multiobjective Optimization Problems with Generalized Convexity
FT/2009-38	Dr. Magdi S. Mahmoud	SE		Decentralized Control and Filtering with Limited Communication
FT/2009-39	Dr. Nasser-eddine Tatar	MATH	--	Stabilization of the Wave Equation with a Weak Fractional Damping
FT/2009-40	Dr. Mustapha M. Achoui	MGT MKT	--	Values and Human Resources Management Alignment in Saudi Companies
FT/2009-41	Dr. Uwe Schauz	MATH	--	Flows of Subspaces of F^n
FT/2009-42	Dr. Baharudin Kadir	RI		Comparative study on Internationalization Strategies of Selected National Oil Companies: The Case of Saudi Aramco, CNPC and SINOPEC
FT/2009-43	Dr. Bassam Tawabini	ES	Dr. Ala Bokhari, CE	Assessing the fate of inorganic and organic disinfection by-products in Saudi Arabian drinking water
FT/2009-44	Dr. Hanafy Omer	AERO	Dr. M Abido, EE	Mission analysis and trajectory optimization for a Lowcost, air launch system for nano and pico satellites
FT/2009-45	Dr. Abdullah Shammari	CHE	Dr. Ba Shammakh, CHE	Post optimality analysis for refinery production planning
FT/2009-46	Dr. Ashraf Galal Eid	FINEC		Testing the Ricardian equivalence in oil based economics: An empirical study on the effects...

FT/2009-47	Dr. Azzedine Zerguine	EE	Dr. Tareq Al-Naffouri, EE	Convergence and Steady-State Analysis of the Leaky Lease Mean Fourth Algorithm: Applications to Mobile Communications
FT/2009-48	Dr. Amar Khoukhi	SE	Dr. Foud al sunnni, SE	A hybrid multi stage trajectory planning for mobile parallel kinematic machines
FT/2009-49	Dr. M Sadiq Sohail	MGT MKT	Dr. Ibrahim al Jabri	Adoption of mobile banking by consumers in Saudi Arabia: an empirical investigation
FT/2009-50	Dr. Abdullah Al Sunaidi	PHYS	Dr. Abdulaziz Al Saadi, CHEM Dr. Abdullatif Ibdah, CHEM	Chemisorption and Physisorption of Thiophene and Ethanethiol on Doped Carbon Nanotubes: A Computational Study
FT/2009-51	Dr. Samir Mekid	ME	Dr. Tahar Loui, ME	Exploring a manufacturing route to produce WC based micro tool with nano structured material
FT/2009-52	Dr Jawad Abuihlail	MATH		Almost Perfect Rings and their Modules
FT/2009-53	Dr. M.K. Rahman	CER - RI	Dr. Mohammad Baluch and Dr. Ali Al-Gadhib (CE)	Service Life Assessment of Stressed Concrete Members Under Chloride Attack
FT/2009-54	Dr. Mohammad Baluch	CE	Dr. M.K. Rahman (Res. Institute)	Study of Segregation and Rheology of Self-Compacting Concrete
FT/2009-55	Dr. Amjad Ashfaq Shaikh	CHE	Dr. Muataz Ali and Dr. Mamdouh Al-Harthi (Che)	To investigate effect of CNT and nano PCC on polystyrene properties
FT/2009-56	Dr. Amjad Ashfaq Shaikh	CHE	Dr. Javaid Zaidi (Che)	Ultrasound treatment to prevent mineral scaling on membrane.

8. PUBLICATIONS IN REFEREED JOURNALS REPORTED AFTER JANUARY, 2009

College of Engineering Sciences

Civil Engineering

1. "RBF Mesh-less Method for Large Deflection of Thin Plates with Immovable Edges", **Al-Gahtani, H.J. and Naffa'a, M.**, Engineering Analysis with Boundary Elements, Vol. 33 (2009), p.176.
2. "Determination of Chloride Content in Different Types of Cement Using Laser-Induced Breakdown Spectroscopy," **Gondal, M.A., Yamani, Z.H., Hussain, T., and Al-Amoudi, O.S.B.**, Spectroscopy Letters, Vol. 42, 2009, 171-177.
3. "Response Calibration of a PGNA Setup Utilizing Silica Fume Cement Concrete Specimens," **Naqvi, A.A., Nagadi, M.M., Garwan, M.A., Al-Amoudi, O.S.B., Maslehuddin, M.M., and Khateeb-ur-Rehman**, Journal of King Saud University [Science], Vol. 21, 2009, pp. 199-202.
4. "Correlation between strength and certain durability indices of plain and blended cement concretes," **Omar S. Baghabra Al-Amoudi, Walid A. Al-Kutti, Shamsad Ahmad, and Mohammad Maslehuddin**, Journal of Cement and Concrete Composites, Vol. 31, 2009.
5. "Flexural Strength of Corroded Reinforced Concrete Beams" **Abul Kalam Azad, Shamsad Ahmad, and Basheer Hasan Al-Gohi**, Magazine of Concrete Research, 2009.
6. "TiO₂-Assisted Photocatalytic Removal of Phenol: Effect of Co-Pollutants", **Muhammad S. Vohra, Syed A. Malik, Mohammad S. Al-Suwaiyan, Alaadin A. Bukhari**, International Journal of Applied Environmental Sciences, Vol. 4 No. 1, 2009, pp. 33-45.
7. "Finite Element Modeling of Pre[stressed Hollow Core Slab Strengthened With CFRP Sheets in Flexure and Shear", **Rahman, M.K., Mahmoud, I.A. and Baluch, M.H.**, Key Engineering Materials, Vols. 400-402, 2009, pp. 531-536.
8. "Thermo-Hygral Model for Shrinkage Induced Stresses in Concrete Structures", **Baluch, M.H., Mahmoud, I.A., and Rahman, M.K.**, Key Engineering Materials, Vols. 400-402, 2009, pp. 929-934.
9. "A Comparative Analysis of currently used microscopic and macroscopic traffic simulation software" **Nedal T. Ratrout and Syed Masiur Rahaman**, The Arabian Journal for Science and Engineering, Vol. 34, April 2009.

10. "Adequacy of Transyt-7F and Syncro models along a major arterial in Saudi Arabia" **Nedal T. Ratrout, and Maen Abdullatif Abu Olba**, Canadian Journal of Civil Engineering, Vol. 36 (1), 2009.
11. "Estimating Grand Mosque attraction of vehicular trips" **Nedal T. Ratrout**, ITE Journal, June 2009.

Chemical Engineering

1. "A Mathematical Programing Model for Achieving Total Emission Control in the Petroleum Refining Industry' **H. Al-Ali, K. AlQahtani and A. Elkamel**, International Journal of Oil, Gas and Coal Technology, Vol 1, No. 4, 2008.
2. "Optimal Production Planning of Electricity from Coal-Fired Power Plant Networks under Environmental Considerations', **Habib H. Al-Ali, Yousef Saif, Ali Elkamel and Ali Lohi**, American Journal of Engineering and Applied Sciences 1 (4): 356-367, 2008.
3. "Incorporation of Scheduling Considerations in Retrofitting Design of Heat Exchange Networks", **Al-Mutairi, E. and El-Halwagi, M.**, Chemical Engineering Transactions, 18, 421 (2009).
4. "An Optiimization Approach to the Integration of Inherently-Safer Design and Process Scheduling", **Al-Mutairi, E., Suardin, J., Mannan, S. and El-Halwagi, Mw** Journal of Loss Prevention in Process Industries, 21 (5), 2008.
5. "Modeling and Simulatoin of a Downer Type HS-FCC Unit", **Shaikh, A., Al-Mutairi, E. and Ino, T**, Industrial & Engineering Chemistry Research, 47 (23), 2008.
6. "Steady-State Biofilter Performance Under Non-Isothermal Conditions", **Z. Shareefdeen, A.A. Shaikh and A. Ahmed**, Chemical Engineering Process, **48**, 1040 (2009).
7. "Chemical Reactions and Chemical Reactors", **A.A. Shaikh**, International Review of Chemical Engineering, **2**, 125 (2009).

Electrical Engineering

1. "Improved analysis of implicit RMS detectors", **M.T. Abuelma'atti**, IEEE Transactions on Instrumentation and Measurement, Vol. 58, 2009, pp. 502-505
2. "Harmonic and Intermodulation performance of metallic carbon nanotube (MCNT) and complementary carbon nanotube field effect transistor

- (CNTFET) amplifier”, **M.T. Abuelma’atti**, Journal of Infrared, Millimeter and Terahertz Waves, Vol. 30, 2009, pp. 453-460.
3. “Static Magnetic Field Influence on Elements Composition in Date Palm (Phoenix dactylifera L.)”, **Faten Dhawi, Jameel M. Al-Khayri and Essam E. Hassan**, Research Journal of Agriculture and Biological Sciences, Vol. 5, No. 2, April 2009, pp 161-166.
 4. “Designing Stable Operators For Explicit Depth Extrapolation of 2-D & 3-D Wavefields Using Projections Onto Convex Sets”, **A. Mousa, M. Van Der Baan, S. Boussakta, and D. C. McLernon** Geophysics, vol. 74, no. 2,P. S33-S45, March 2009.
 5. “Analysis of Coded FHSS With Multiple Access Interference Over Generalized Fading Channels,” **Salam Zummo**, EURASIP Journal on Wireless Communication and Networking, January, 2009.
 6. “Performance of Coded Systems With Generalized Selection Diversity in Nakagami Fading,” **Salam Zummo**, EURASIP Journal on Wireless Communication and Networking, Vol. 8, no. 3, December, 2008.
 7. “Multiobjective optimal var dispatch considering control variable adjustment costs,” **M. A. Abido**, International Journal of Power and Energy Conversion, Volume 1, Number 1, 2009, pp. 90-104.
 8. “Power System Stability Enhancement Using FACTS Controllers: A Review,” **M. A. Abido** The Arabian Journal for Science and Engineering, Volume 34, Number 2B, 2009, pp. 153-172.
 9. “Multiobjective Particle Swarm Optimization for Environmental/Economic Dispatch Problem,” **M. A. Abido**, Electric Power Systems Research, Vol. 79, July 2009, pp. 1105-1113.
 10. "A Numerical Approach for Full-Vectorial Analysis of Three Dimensional Guided Wave Structures with Multiple and Strong Longitudinal Discontinuities", **H. A. Jamid and Md. Z. M. Khan**, IEEE Journal of Quantum Electronics, Vol. 45, no. 2, (February 2009), pp: 117-124.
 11. “TUA analysis of finite user finite buffer S-ALOHA System for a certain spatially distributed users in the presence of channel fading,” **A. U. Sheikh and S. B. Rasool** , AEU Journal of Electronics and Communications, Vol. 63, no.6, pp. 464-471, Elsevier Publishers, June 2009.
 12. “Multiple Access Interference plus Noise Constrained Least Mean Square (MNCLMS) Algorithm for CDMA Systems,” **M. Moinuddin, A. Zerguine**,

- and **A. U. Sheikh**, IEEE Trans. Circuits and Systems-I, Vol. 55, No. 9, pp. 2870-2883, October 2008.
13. "Convergence and Tracking Analysis of a Variable Normalised LMF (XE-NLMF) Algorithm," **A. Zerguine, M. K. Chan, T. Y. Al-Naffouri, M. Moinuddin, and C. F.N. Cowan**, Signal Processing, Volume 89, Issue 5, pp. 778-790, May 2009.
 14. "Variable susceptance excitation control for dynamic performance improvement of a stand-alone wind turbine induction generator system", **A.H.M.A.Rahim and M. Ahsanul Alam**, Int. J. of Renewable Energy Technology, Vol.1, No. 1, pp.1-16, 2009.
 15. "A Forward-Backward Kalman Filter-based STBC MIMO OFDM Receiver" **T. Y. Al-Naffouri and A. Quadeer**, EURASIP Journal on Advances in Signal Processing, May 2009.
 16. "Convergence and tracking analysis of a variable normalised LMF (XE-NLMF) algorithm," **A. Zerguine, M. K. Chan, T. Y. Al-Naffouri, and M. Moinuddin**, Signal Processing, Vol. 89, no. 5, May 2009.
 17. "How much does transmit correlation affect the sum-rate scaling of MIMO Gaussian broadcast channels?" **T. Y. Al-Naffouri, M. Sharif, and B. Hassibi**, IEEE Transactions on Communications, Vol. 57, no. 2, Feb. 2009.
 18. "A New Algorithm for Crack Localization in a Rotating Timoshenko Beam", **Ahmad A. Masoud, Samer A. Said**, Journal of Virbration and control, May 7, 2009.
 19. "Development and Implementation of an Electric Circuits On-Line Course", **Mahmoud M. Dawoud, Hussain Al-Jamid, Noman Tassaduq, Ahmed Hussain, and Umar Johar**, International Journal of online engineering (iJOE), Volume 5, Issue 1, February 2009, pp. 23-26.
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3. "Improved Error Performance by Loop Removal in Semi-Random LDPC Code Constructions," **Faisal Zaheer, Adnan Landolsi and Salam Zummo,** Proceedings of the 5th IEEE GCC Conference (GCC'09), Kuwait, March 2009.
4. "Spectral Efficiency of Maximum Ratio Combining: Slow Fading", **Fawaz S. Al-Qahtani, Salam Zummo, Arun K. Gurung, and Zahir M. Hussain,** Proceedings of the Int'l Conference on Communications, Computer and Power, (ICCCP'09), Muscat, Oman, February 2009.
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12. "Optimization of Multi-FACTS Devices for Multi-objective Voltage Stability Problem: A Comparative Study," **R. Benabid, M. Boudour, and M. A. Abido**, The IEEE PowerTech 2009 Conference, Romania, June 29 – July 2, 2009.
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14. "Directional UWB Channel Simulator", **Ali H. Muqaibel, and Umar M. Johar**, Workshop on Positioning , Navigation and Communications 2009, WPNC 09, Hannover, Germany, 19 March 2009.
15. "Utilization of Bluetooth Technology to Locate and Direct Pilgrims", **Ali Hussein Muqaibel, and Saad Al-Shahrani**, The 9th Scientific Meeting for Hajj Research, Makkah, Saudi Arabia, March 10-12, 2009.
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4. "Oligonucleotide-based Signal Amplification of Nucleic Acids Hybridization Electroanalytical Ultrasensitive Detection" **A. Kawde**, 60th Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, March 8-13, 2009, Chicago, IL, USA,

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1. "Modeling and planning groundwater resources by using geostatistics and numerical models", **Makkawi, M.**, the 8th meeting of the Saudi Society for Geosciences, March 9-12, 2009.
2. "Site amplification factors across Ontario estimated from horizontal-to-verical ratio method", **SanLinn I. Kaka**, the 7th General Assembly of Asian Seismological Commission and Seismological Society of Japan, 2008 Fall meeting, Tsukuba, Japan, November 24-27, 2008.
3. "Real-time application of seismic data for the Kingdom of Saudi Arabia", **SanLinn I. Kaka**, the 8th meeting of the Saudi Society for Geosciences, March 9-12, 2009.
4. "The Impact of Groundwater Quality on the Removal of MTBE Using Advanced Oxidation Technology", **Tawabini B.**, Proceedings of the AOP5, IWA international Conference, Germany, March 30 – April 03, 2009.
5. "Environmental Impact Assessment of Disposing Onshore Drilling Wastes in Sabkha Deposits", **Tawabini B., and A. Al-Shaibani**, the 8th meeting of the Saudi Society for Geosciences, March 9-12, 2009.
6. "Importance of GIS for Geological Studies", **Hariri, M. M.**, the 8th meeting of the Saudi Society for Geosciences, March 9-12, 2009.

7. "Geomechanical properties and rock mass quality classification of the carbonate Rus Formation in Dammam dome, eastern Saudi Arabia", **Osman Abdullatif and Mustafa Hariri**, the 8th meeting of the Saudi Society for Geosciences, March 9-12, 2009.

Department of Mathematics & Statistics

1. "New bounds for a singular integro-differential inequality and application to fractional differential problems", **Tatar, N-e.**, The International Conference on Modelling of Engineering and Technological Problems (ICMETP'09), BMAS Engineering College, Agra, India, (Jan. 14-16, 2009).
2. "Polynomial stability for a viscoelastic problem", **Tatar, N-e.**, Third International Conference on Modeling, Simulation and Applied Optimization (ICMSAO'09), American University of Sharjah, Sharjah, UAE, (January 20-22, 2009).
3. "Blow up in finite time for a beam problem with fractional boundary controller", **Tatar, N-e.**, Seventh International Conference on Composite Science and Technology (ICCST/7), American University of Sharjah, Sharjah, UAE, (January 20-22, 2009).
4. "Stability for a large class of kernels in viscoelasticity", **Tatar, N-e.**, International Conference on Mathematical Modelling, Sultan Qaboos University, Muscat, Oman, (February 23-26, 2009).
5. "Advances in Number Theory and Geometry", **M. Aslam Chaudhry**, 150 years of Riemann Hypothesis (RISM) Riemann International School of Mathematics, Verbania, Italy, (April 19 – 24, 2009).
6. "On the stabilization of the Timoshenko system by a weak nonlinear dissipation", **Messaoudi, S.A.**, International Conference on Modeling of Engineering and Technological Problems, and 9th Biennial Conference of Indian Society of Industrial and Applied Mathematics, Agra, India (Jan 14-16, 2009).
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8. "Uniform decay result in some Timoshenko-type systems", **Messaoudi S.A.**, International Conference on Mathematical Modelling (ICMM), (February 23-26, 2009).

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10. "Distribution of sample variances based on Bivariate normal population", **Joarder, A.H.**, First Conference of Saudi Association for Statistical Sciences (SASS), King Khalid University, Abha, Saudi Arabia, (April 14-15, 2009).
11. "Minimizing Examinee Collusion with a Latin-Square Treatment Structure," **Omar, M.H.**, International Conference on computational and statistical Data Analysis (ICCSDA), Hong Kong, (Mar 2009).
12. "RBF-Based Collocation Method For Navier Stokes Equations.", **Al-Gahtani, Husain J. and Fairag, Faisal A.**, Proceeding of the 5th. 8th. World Congress on Computational Mechanics (WCCM8), European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2008), Venice, Italy, (June 30 – July 5, 2008).
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14. "Nonlocal Cauchy Problems for Semilinear Evolution Inclusions," **Boucherif, A.**, 6th International Conference on Differential Equations and Dynamical Systems, Baltimore, USA, pp.262-265, (May 22-26, 2009).
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21. "On the Choice of Knots in Orthogonal Collocation. Book of Abstracts", **Bokhari, M. A.** and **Al-Attas, H.**, International Conference on Scientific Computation and Differential Equations, Beijing, China, pp.149, (May 25-29, 2009).
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Physics Department

1. "Rapid Assessment of Concrete and Cement Samples Using Laser Induced Breakdown Spectroscopy", **M.A. Gondal**, National workshop on concrete inspection, Dhahran, Saudi Arabia, 11 February, (2009).
2. "In-situe Monitoring of Removal of Toxic Pollutants in Soil Using Laser Induced Breakdown Spectroscopy (LIBS)", **M.A. Gondal**, T. Hussain and **Z.H Yamani**, KACST Proceedings (2009).
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9. "Indoor Radon Concentrations in Saudi Dwellings and Its Risk estimate", **M.I. Al-Jarallah**, F. Abu-Jarad, Fazlurhman, Asadulislam and **A. Shukri**, The 1st International Conference on Radiation Protection Matters in GCC Countries, KACST-Riad-11-13/5/2009
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12. "Synthesis and Characterization of DC Magnetron Sputtered Zinc Oxide Thin Films under High Working Pressures", M. Hezam, **N. Tabet** and **A. Mekki**, presented at the International Conference on Materials for Advanced Technology, Singapore, 28 June-3 July 2009.
13. "A Window on Mammography Quality Assurance", **Maalej N.**, presented at the 4th International Conference on Medical Physics, Dhahran, KSA, 23-25 May, 2009.
14. "Master's Program in medical Physics at KFUPM", **Maalej N.**, presented at the 4th International Conference on Medical Physics, Dhahran, KSA, 23-25 May, 2009.
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16. "Linear accelerator Photon Beam Interaction with the Virtual Physiological Human", **Maalej N.**, Maganda Umar, presented at the 4th International Conference on Medical Physics, Dhahran, KSA, 23-25 May, 2009.
17. "Monte Carlo as a research Tool in Training Medical Physicists", **Maalej N.**, presented at the conference on Innovative Approaches in Radiotherapy, Riyadh, KSA, 9-12 March, 2009.
18. "Design of a Filter to achieve Uniform x-ray exposure", Abdulkhaliq F, **Maalej N.**, presented at the 4th International Conference on Medical Physics, Dhahran, KSA, 23-25 May, 2009.
19. "Synthesis of pure and In-doped ZnO nanowires and their dynamic response to hydrogen gas", **M. Faiz**, Q. Ahsanulhaq, and **N. Tabet**, Abst: International Conference on Nanotechnology and Advanced Materials, Bahrain (2009)
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21. "On The structure Of Deposited Diamond-Like Carbon Films Produced By Rf (13.56MHz) CH₄ Plasma" M. Ouchabane, M. Kechouane, K. Henda, H. Salah, B. Touchrift, and **N. Tabet**, in " Laser and Plasma Applications in Materials Science" International Conference on Laser Plasma Applications in Materials Science-LAPAMS'08", AIP Conf. Proc. 2008, Volume 1047, pp. 123-126.
22. "Preparation and Characterization of ZnO Nanofibers by Electrospinning", R. Bouzerara, S. Achour, **N. Tabet**, S. Zerkout, International Conference on Nanotechnology and Advanced Materials, (ICNAM), Bahrain, 4-7 May 2009.
23. "Synthesis and Gas Sensing Properties of Zinc Oxide Nanstructures obtained by a novel microwave based technique", **N. Tabet**, **M. Faiz**, R. Al Gaashani, and Q. Ahsanulhaq, International Conference on Materials Thin films 2009, Singapore, 28 June-3 July 2009.

College of Computer Science & Engineering

Information & Computer Science Department

1. "Discovering classification rules for email spam filtering with an ant colony optimization algorithm," **El-Sayed M. El-Alfy**, IEEE Congress on Evolutionary Computation (CEC'09), Trondheim, Norway, May 18-21, 2009.
2. "E-Restaurant: A collaborative distributed system integrating restaurant operation automation and meal recommendation," **El-Sayed M. El-Alfy and**

- Said A. Muhammad**, Proceedings of the Fourth eServices Symposium in the Eastern Province of Saudi Arabia: eServices Integration, Al-Khobar, Saudi Arabia, March 9-11, 2009.
3. "The need for a unified framework for evaluating web cache replacement strategies," **El-Sayed M. El-Alfy and Anas M.N. Orwani**, Proceedings of the 5th IEEE-GCC Conference, Kuwait, March 17-19, 2009.
 4. "Recognition of Arabic (Indian) Check Digits Using Spatial Gabor Filters", **Sabri A. Mahmoud**, Proceedings of the 5th IEEE-GCC 2009-Computing and IT, Kuwait, March 17-19, 2009.
 5. "An Empirical Study of Bagging and Boosting Ensembles for Identifying Faulty Classes in Object-Oriented Software," **H. Aljamaan and M. Elish**, Proceedings of the IEEE Symposium on Computational Intelligence and Data Mining (CIDM'09), TN, USA, Mar. 2009, pp. 187-194.
 6. "Application of TreeNet in Predicting Object-Oriented Software Maintainability: A Comparative Study," **M. Elish and K. Elish**, Proceedings of the 13th IEEE European Conference on Software Maintenance and Reengineering (CSMR'09), Germany, Mar. 2009, pp. 69-77.
 7. "Multi-Category Bioinformatics Dataset Classification using Extreme Learning Machine", **Tarek Helmy, Zeehasham Rasheed**, Proceedings of IEEE Congress on Evolutionary Computation, pp. to appear, 18-21 May, Norway , 2009.
 8. "Agent-Oriented Service Model for Personal Information Manager", **Tarek Helmy, Ali Bahrani and Jeffery Bradshaw**, ACM Proc. of 8th International Conference on Autonomous Agents and Multi-agent Systems (AAMAS09), pp. to appear, May, 10–15, Budapest, Hungary, 2009.
 9. "A Self-Adapting Web Server Architecture: Towards Higher Performance and Better Utilization", **F. Azzedin, and K. Al-Issa**, 2009 High Performance Computing and Simulation Conference (HPCS'09), June 21-24, 2009, Leipzig, Germany.
 10. "Post-Implementation Scenarios in Successful Enterprise Resource Planning (ERP) Systems", **J. Yazdani, S. M. Sait**, Proceedings of The Fourth eServices Symposium in the Eastern Province, Al-Khobar, Saudi Arabia Vol. 1, March 9-11, 2009.
 11. "RE-UML: An Extension to UML for Specifying Component-Based Software System", **Sajjad Mahmood and Richard Lai**, In Proceedings of 20th Australian Software Engineering Conference (ASWEC 2009), Gold Coast, Australia, pp. 220 – 228, IEEE Computer Society, 2009.

12. "A Reputation-based Game for Tasks Allocation", **H. Yahyaoui**, In Proceedings of the 11th International Conference on Enterprise Information Systems (ICEIS'09), pp. 728-736, LNBIP Vol. 24, Milan, Italy, May 2009.
13. "on the Synchronization of Web Services Interactions", **Z. Maamar, Q. Z. Sheng, H. Yahyaoui, K. Boukadi, and X. Li**, the IEEE 23rd International Conference on Advanced Information Networking and Applications (AINA'09), Bradford, UK, May 2009, IEEE Press.
14. "Web Services Synchronization in Composition Scenarios: The Centralized View", **H. Yahyaoui, Z. Maamar, and K. Boukadi**, the International Conference on Information Science, Technology and Applications (ISTA'09), Kuwait, March 2009.
15. "Table Based Parsing for RNA", **Muhammed Al-Mulhem**, The 2009 World Congress on Computer Science and Information Engineering (CSIE 2009), March 31 to April 2, 2009, Los Angeles/Anaheim, USA.
16. "A Novel Minimal Arabic Script for Preparing Databases and Benchmarks for Arabic Text Recognition Research", **Husni A. Al-Muhtaseb, Sabri Mahmoud, and Rami S. Qahwaji**, 8th WSEAS International Conference on Signal Processing ((SIP '09), pp37-43, Istanbul, Turkey, June 2009.

Computer Engineering Department

1. "C2AM: An Algorithm for Application-Aware Movement-Assisted Recovery in Wireless Sensor and Actor Networks," **Ameer Abbasi; Uthman Baroudi, Mohamed Younis and Kemal Akkaya**, IWCMC 2009, Leipzig, Germany, June 21-24, 2009
2. "Placement of Access Points in Wireless Local Area Networks," **Faisal Al-Nasser; Mansour Al-Dajani; Uthman Baroudi; Shokri Selim**, IWCMC 2009, Leipzig, Germany, June 21-24, 2009.
3. "Simulation Analysis of Bi-Directional traffic characterization over Wireless Ad Hoc Networks," **Saqib Razak and Uthman Baroudi**, IWCMC 2009, Leipzig, Germany, June 21-24, 2009
4. "Tracking Anonymous Sinks in Wireless Sensor Networks," **Elhadi M. Shakshuki, Tarek R. Sheltami, Nan Kang, and Xinyu Xing**, The IEEE 23rd International Conference on Advanced Information Networking and Applications (AINA-09), Bradford, UK, May 26-29, 2009, pp. 510-516.

5. "Lessons Learned: Simulation Vs WSN Deployment," **Elhadi M. Shakshuki, Haroon Malik, and Tarek R. Sheltami**, to appear The IEEE 23rd International Conference on Advanced Information Networking and Applications (AINA-09), 580-587, Bradford, UK, May 26-29, 2009.
6. "Analysis of Handoff Delay Components for Mobile IP-Based 3GPP UMTS/WLAN Interworking Architecture," **Abdul-Aziz Al-Helali, Ashraf Mahmoud, Talal Al-Kharobi and Tarek Sheltami**, The IEEE 23rd International Conference on Advanced Information Networking and Applications (AINA-09), Bradford, UK, May 26-29, 2009.
7. "RFID-BASED SMART SHOPPING CART," **Tarek Sheltami and Elhadi Shakshuki**, the IEEE Communication Networks and Services Research Conference (CNSR 2009), May 11-13, 2009, Moncton, New Brunswick.
8. "Characterization of Vertical Handoff Delay for Mobile IP Based 3G/WLAN Integrated Network," **Abdul-Aziz Al-Helali, Ashraf Mahmoud, Talal Al-Kharobi and Tarek Sheltami**, the IEEE 69th Vehicular Technology Conference: VTC2009-Spring, April 26–29, 2009, Barcelona, Spain. pp. 1-5.
9. "Performance Evaluation for Geographical and Energy Aware Routing Protocol," **Tarek R. Sheltami, Elhadi M. Shakshuki, Ismat K. Maarouf**, the 5th IEEE GCC 2009 Communications and Signal Processing, Kuwait, March 17-19, 2009.
10. "A Novel Dual-Mode User Equipment Design and Enhanced Network Selection Algorithm for B3G Networks," **Abdul-Aziz Al-Helali, Ashraf Mahmoud, Talal Al-Kharobi and Tarek Sheltami**, the 3rd International Conference on Modeling Simulation and Applied Optimization, January 20-22, 2009, Sharjah, UAE.

College of Industrial Management

Department of Finance & Economics

1. "An Empirical Estimate of the UK Consumption Function", **Mohammad Sayed Hasan and Robert Gausden**, Portsmouth Business School, University of Portsmouth, Portsmouth, United Kingdom, April 24, 2009.
2. "Managerial Behavior and the Link between Stock Mispricing and Corporate Investments: Evidence from a decomposition of market-to-book ratios", **Mohammed Alzahrana and Ramesh P. Raob**, Asian Finance Association Annual Meeting, Brisbane, Australia.

10. BOOKS PUBLISHED AND CONTRIBUTIONS

Electrical Engineering Department

1. "Modern Approach to Solving Electromagnetics in MATLAB", **Mohammad Nuruzzaman**, BookSurge Publishing, Charleston, South Carolina, USA, January 26, 2009.
2. "Solving Environmental/Economic Dispatch Problem: The Use of Multiobjective Particle Swarm Optimization," **M. A. Abido**, Intelligent Information Systems and Knowledge Management for Energy: Applications for Decision Support, Usage and Environmental Protection, Book edited by Dr. Kostas Metaxiotis, National Technical University of Athens (NTUA), Department of Electrical & Computer Engineering, Decision Support Systems Laboratory, Athens, GREECE, published by IGI Global, Chapter IV, May 2009,
3. "Iterative forward-backward Kalman filtering for data recovery in (multiuser) OFDM communications," **T. Y. Al-Naffouri, M. Saqib, and A. A. Quadeer**, Applications of Kalman Filters, I-Tech Education and Publishing, January 2009.

ICS Department

1. "Developing Advanced Web Services through P2P Computing and Autonomous Agents: Trends and Innovation", **Tarek Helmy, Khaled Ragab**, IGI-Global, Publisher of the Information Science Reference, 2009.
2. "Overview of Service Oriented Architecture for Resource Management in P2P Systems. **F. Azzedin, M. Eltoweissy, S. Khwaja**, To appear in the Handbook of Research on P2P and Grid Systems for Service-Oriented Computing: Models, Methodologies and Applications, Dr. Nick Antonopoulos, Mr. Georgios Exarchakos, Dr. Maozhen Li, and Dr. Antonio Liotta, ed., June, 2009.

Department of Mathematics & Statistics

- 1 Application of generalized Feynman graph to stochastic partial differential equations driven by Levy noise." **Smii, B.**, (Book, Preprint Dhahran, January 2009).

11. TECHNICAL REPORTS, FUNDED PROJECTS AND PATENTS

College of Engineering

Civil Engineering Department

1. "Production of Granular Activated Carbon from Date Palm Tree Branches", **Vohra, M.S.** (Principal Investigator), **Al-Zahrani, M.A. and Essa, M.H.** (Co-Investigators), Project Number: AR 26-23, Progress Report – 3, submitted to King Abdulaziz City for Science and Technology (KACST), February 2009.
2. "Environmental Effects of Wastewater Treatment Plants: Evaluation & Guidelines" **Vohra, M.S.** (Principal Investigator), **Al-Suwaiyan M.S., Al-Zahrani, M.A. and Essa, M.H.** (Co-Investigators), Project Number: AR2 25-78, Final Report, submitted to King Abdulaziz City for Science and Technology (KACST), March 2009.

Electrical Engineering Department

1. "Performance of Forward Error Correction in Wireless Ad-Hoc Networks", **Salam A. Zummo, Principle Investigator**, (Final Report Approved for a KFUPM funded project), March 2009.
2. "New Adaptive Schemes for Wireless Networks Based on Multi-Layer Space-Time Codes," **Salam A. Zummo, Co-Investigator**, (Final Report Approved for a KFUPM funded project), April 2009.
3. "Optimal Design of Fuzzy-Based Guidance Law for Homing Missiles with Noisy Measurements Using Multi-Objectives Evolutionary Algorithms," **Omar Hanafy and M. A. Abido**, KFUPM, January 2009.
4. "Optimal Power Flow Using Multiobjective Particle Swarm Optimization," **M. A. Abido**, SAB/2007-01, KFUPM, February 2009.
5. "Finance-Based Scheduling Of Multiple Simultaneous Construction Projects," **A. El-Azzouni and M. A. Abido**, SAB/2007-12, KFUPM, February 2009.
6. "Circularly Polarized Microstrip Line Semiconductor Phase-shifters for Phase array antennas", **Sheikh Sharif Iqbal Mitu and M. M. Dawoud**, Revised Final report of a Fast-Track funded project, March, 2009.

College of Sciences

Chemistry Department

1. "Investigating The Reactivity Behavior Of Arabian Asphaltenes", **Mohammad Nahid Siddiqui** SB070020, SABIC funded project, Duration: 12 Months, completed May 2009.
2. "On-Demand Analyte Monitor and Method of Use" **A. Jina, B. Chua, S. Desai, and A. Kawde**, US Patent 2008/0312518 A1.
3. "Methods and Apparatus Incorporating a Surface Penetration Device" **A. Jina, B. Chua, S. Desai, A. Parmar and A. Kawde**, US Patent 2008/0058726 A1

Department of Mathematics & Statistics

1	"A threshold for validity of the bootstrap in a critical branching process", Rahimov, I. Technical Report# 403.
2	"Estimation of Kurtosis for multivariate data", Ahmed, S.E., Omar, M.H. and Joarder, A.H. , Technical Report# 404
3	"The Probability of a Sample Outcome in Sampling Without Replacement", Joarder, A.H., Laradji, A. and Omar, M.H. , Technical Report# 405

College of Computer Science & Engineering

ICS Department

1. "A neural networks model with bounded-Weights as a novel approach for forecasting incomplete data imputation in software cost assessment" **Emad El-Sebakhy, Tarek Helmy and Mohamed El-Shayeb**, Final Report SABIC, March 2009.

12. INTERNAL LECTURES AND SEMINARS OFFERED BY KFUPM FACULTY

Chemical Engineering Department

1. Speaker : Dr. Eid Al-Mutairi
 Topic : Simultaneous Design and Scheduling – Heat Exchange Network Retrofitting
 Date : April 15, 2009

Electrical Engineering Department

- 1 Speaker : Dr. **Salam A. Zummo**
 Topic : "Strategic Roadmap and Latest Initiatives in Graduate Studies," A presentation delivered in a Workshop for Chairmen and Graduate Coordinators, KFUPM,
 Date : April, 2009.
- 2 Speaker : Dr. **Salam A. Zummo**
 Topic : "An Overview of KFUPM," A presentation delivered in the campaign to recruit excellent graduate students, Several Egyptian Universities, Egypt,
 Date : March 2009.
- 3 Speaker : Dr. **Salam A. Zummo**
 Topic : "An Overview of KFUPM," A presentation delivered in the campaign to recruit excellent faculty members, Several US Universities, US.
 Date : February 2009.

Invited Talks:

1. **T. Y. Al-Naffouri**, Indefinite quadratic forms in Gaussian random variables: Distribution, scaling, and applications, Electrical Engineering Department, Texas A & M Qatar, June 3, 2009.
2. **T.Y. Al-Naffouri**, Writing with two languages: \$yMb0ls & Words, Electrical Engineering Department, King Fahd University of Petroleum and Minerals, April 7, 2009.
2. **T. Y. Al-Naffouri**, Indefinite quadratic forms in Gaussian random variables: Distribution, scaling, and applications, Electrical Engineering Department, American University of Beirut, February19, 2009.

Technical Editing

1. **M. A. Abido**, Guest Editor, Special Issue on “FACTS Technology Applications to Power System Studies, International Journal on Power and Energy Conversion, Inderscience Publishers, UK.
2. **M. A. Abido**, Editorial Board Member, International Journal of Applied Metaheuristic Computing (IJAMC), IGI Global.

Mechanical Engineering Department

1. Speaker : Dr. N. Aqeeli
Topic : Nano-indentation studies of Bulk Metallic Glasses
Date : Jan., 06, 2009.
2. Speaker : Mr. Mannucci
Topic : Recent products and technologies in Thermotronics/
Refrigeration / Air Conditioning/Renewable
Energy/Water Desalination
Date : March, 10, 2009.
3. Speaker : Prof. Tonio Buonassisi
Topic : The fundamental challenges of solar energy conversion
Date : March, 11, 2009.
4. Speaker : Mr. Peter Rosker
Topic : Rapid Prototyping Solutions
Date : March, 18, 2009.
5. Speaker : Dr. M. Antar
Topic : Open Access Initiative - Phase 2 – Mechanical
Engineering Progress
Date : March, 24, 2009.
6. Speaker : Attia E. Khalifa
Topic : Experimental and numerical investigation of flow
induced vibration in a high pressure double volute
centrifugal pump (PhD Dissertation Defense).
Date : March, 25, 2009.
7. Speaker : Dr. Rajai S. Alassar
Topic : Potential Flow past two Cylinders
Date : March, 31, 2009.
8. Speaker : Mr. Husain Al-Muslim
Topic : Impact of Combined Mechanical Damage on the
Integrity of Pipelines
Date : May, 12, 2009.

9. Speaker : Mr. Syed Ammar A. Tirmizi
Topic : Performance Analysis of Chilled Water Systems and the effect of incorporation of Ejector Cooling System
Date : May, 24, 2009.
10. Speaker : Mr. Wael Fallatah
Topic : Study of Mechanical Properties and Processability of Blown Films using b-LLDPE and LDPE Blends
Date : May, 31, 2009.
11. Speaker : Dr. S. Nouari
Topic : Nano-powder Metallurgy: An Emerging Technology for Processing Nanomaterials
Date : June, 02, 2009.

Department of General Studies

- 1- "Saudi Arabia and Britain: the Background of the Contemporary Relations", **Aldamer, S.**, (Invited Lecture), London Book Fair, London UK, April 22, 2009.
- 2- حقوق الطفل بين الإسلام و الأنظمة الغربية، (محاضره مدعو لها)، د.عبدالرحمن العصيل، الغرفة التجارية، الأحساء، 29 مارس 2009م.
- 3- النوم طريقك إلى النجاح،(محاضره مدعو لها)، أ. عبداللطيف المقرن، كلية الجبيل الصناعية، 25 ذو القعدة 1429هـ.

ICS Department

Seminars Given by Invited Speakers:

1. "CEDARABIC: A system to search scanned Arabic documents", Prof. Sargur N. Srihari, March 4, 2009.
2. "Seminar on ESMERALDA", **Dr. Thomas Ploetz**, April 13, 2009.
3. "Formalized Structural Metrics", **Dr. Wei Li**, 9th of May, 2009.
4. "Formal Methods of Software Engineering" **Dr. Wei Li**, May 11-12, 2009.

Short Courses Given by Invited Speakers:

1. "Machine Learning" **Prof. Sargur N. Srihari**, from March 05 to March 7, 2009.
2. "HMM based Hand Writing Recognition", **Dr. Thomas Ploetz**, April 11-13, 2009.

Computer Engineering Department

1. Speaker : Dr. Zubair A. Baig
 Title : "DDoS Attacks and Defenses",
 Venue : COE-KFUPM
 Date : March 24, 2009

Chemistry Department

1. Title : My Last Five Years Research Activity: Advances on Electrochemical-Based Detection of Nucleic Acids, Proteins and Sugars
 Date : Feb. 23rd, 2009
 Location : SAICSC-ACS, *Holiday Inn*, Al Khobar, KSA

Earth Sciences Department

1. Speaker: Dr. SanLinn I. Kaka
 Title: Recent Earthquakes Swarm at Al-Ais, Near Madinah
 Venue: Student Center, Organized by the Deanship of Student Affairs, Dhahran, KFUPM
 Date: June 09, 2009
2. Speaker: Dr. Abdulaziz Al-Shaibani
 Title : Water Resources in KSA & Impacts of Mining on Water Resources
 Venue: Invited talk at the International Mining exhibition and Forum, Jeddah, Saudi Arabia
 Date: January 19, 2009.

Lecturers/Seminars by Math Faculty:

Regular Seminars

1	Speaker	:	Dr. Uwe Schauz
	Title	:	Describing Polynomials as Equivalent to Explicit Solutions
	Date	:	Tuesday, January 06, 2009
2	Speaker	:	Dr. Mihai Halic
	Title	:	About the Stability of the Restriction of Stable Bundles to nef
	Date	:	Divisors Tuesday, January 13, 2009
3	Speaker	:	Dr. Abdelkader Boucherif
	Title	:	Parabolic Inclusions with Nonlocal Conditions
	Date	:	Tuesday, January 27, 2009
4	Speaker	:	Dr. Koko Kayibi (PYP, KFUPM)
	Title	:	Introduction to the Tutte Polynomial

	Date	:	Tuesday, January 20, 2009
5	Speaker	:	Dr. Faisal Fairag
	Title	:	Conjugate Gradient Method for Indefinite Matrices
	Date	:	Tuesday, March 3, 2008
6	Speaker	:	Dr. Issam Louhichi
	Title	:	Products of Toeplitz Operators on the Bergman
	Date	:	Tuesday, January 10, 2009
7	Speaker	:	Dr. Assane Lo
	Title	:	On the Analyticity of the Pressure for Certain Classical
	Date	:	Unbounded Models
		:	Tuesday, April 07, 2009
8	Speaker	:	Dr. Bilal Chanane
	Title	:	Nonlocal Sturm-Liouville Problems
	Date	:	Tuesday, April 21, 2009
9	Speaker	:	Dr. Uwe Schaub
	Title	:	Mr. Paint and Mrs. Correct
	Date	:	Tuesday, May 05, 2009
10	Speaker	:	Dr. Husain Al-Attas
	Title	:	Enhancing Reliability of Porous Media Flow Through
	Date	:	Sensitivity Analysis
		:	Tuesday, May 12, 2009
11	Speaker	:	Dr. Ashfaq H. Bokhari
	Title	:	Singular Boundary Value Problems with Real World
	Date	:	Applications
		:	Tuesday, May 26, 2009
12	Speaker	:	Dr. Abdallah Laradji
	Title	:	A Unified Approach to Compactness
	Date	:	Tuesday, June 09, 2009

Research (Star) Colloquium Seminar

1	Speaker	:	Drs. I. Rahimov, M.H. Omar and Mr. M. Malik
	Title	:	Is the Bootstrap Always Valid? (Part 1 of 2)
	Date	:	Sunday, January 4, 2009
2	Speaker	:	Drs. I. Rahimov, M.H. Omar and Mr. M. Malik
	Title	:	Is the Bootstrap Always Valid? (Part 2 of 2)
	Date	:	Sunday, January 25, 2009
3	Speaker	:	Dr. Anwar H. Joarder
	Title	:	The Probability of a Sample Outcome in Sampling Without
	Date	:	Replacement
		:	Sunday, May 17, 2009
4	Speaker	:	Dr. Raja M. Latif
	Title	:	Topological Characterizations of Probabilistic Metric Spaces
	Date	:	Sunday, June 14, 2009

Student Seminars

1	Speaker Title Date	: : :	Mr. Radwan Ali Al-Rubae On a Generalized Fisher Equation Wednesday, January 21, 2009
2	Speaker Title Date	: : :	Mr. Muhammad Abdulwahab Similarity Classifications and Exact Invariants for the Generalized Burgers Equation Wednesday, January 28, 2009
3	Speaker Title Date	: : :	Mr. Khaled Ali Ayed Al-Anezy Solving First Order ODE's Using Symmetries Sunday, February 1, 2009
4	Speaker Title Date	: : :	Mr. Yaser Mousa Busaleh Well-orders and Goodstain's Sequences Wednesday, June 24, 2009

Adjunct Professors

1	Speaker Title Date	: : :	Prof. Robert Wisbauer (Adjunct Prof., Mathematics and Statistics Department, KFUPM and Dusseldorf, Germany). Monads and Comonads in Module Categories Tuesday, March 31, 2009
2	Speaker Title Date	: : :	Prof. Dr. Asghar Qadir (Adjunct Prof., Mathematics and Statistics Department, KFUPM and Center for Advanced Math. & Physics, National University of Science and Technology., Pakistan). Sunday, April 12, 2009

Visitor Seminars

1	Speaker Title Date	: : :	Prof. Dr. Hans-Dietrich Gronau (2008 Paul-Erdos-Award), Univ. Rostock, Germany Latin square, triple systems and double coverings Tuesday, March 17, 2009
2	Speaker Title Date	: : :	Prof. Dr. Surender K. Jain (Director Center of Ring Theory, Ohio Univ., USA) On the Generalized Inverses and Applications Tuesday, April 14, 2009
3	Speaker Title Date	: : :	Prof. M.Z. Nashed (Department of Mathematics, Univ., Central Florida, USA) Inverse Problems: An Overview, Examples, and Methodologies Monday, May 18, 2009
4	Speaker Title Date	: : :	Prof. M.Z. Nashed (Department of Mathematics, Univ., Central Florida, USA) Recovery Problems from Partial Information: The Power of

			Signal Processing Tuesday, May 19, 2009
5	Speaker Title Date	:	Prof. M.Z. Nashed (Department of Mathematics, Univ., Central Florida, USA) Moment Problems in Applied and Computational Mathematics Saturday, May 23, 2009
6	Speaker Title Date	:	Prof. M.Z. Nashed (Department of Mathematics, Univ., Central Florida, USA) Differential Calculus for Smooth and Nonsmooth Analysis with Application to Newton-like Methods Sunday, May 24, 2009
7	Speaker Title Date	:	Prof. Ravi P. Agarwal (Florida Technical Institute, USA) Singular Boundary Value Problems with Real World Applications Tuesday, May 26, 2009
8	Speaker Title Date	:	Prof. Fazal M. Mahomed (University of Witwatersrand, South Africa) Complete Characterizations of (1+1) Parabolic Equations Tuesday, June 2, 2009

Thesis Defense

1	Speaker Title Date	:	Mr. Mohammed Sameeh Jarrar The tilting and star module theory in commutative rings Sunday, May 31, 2009
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Commutative Algebra Weekly Seminar (Organizer: Dr. S. Kabbaj), March 2009, – May 2009 (Seminars given by the following faculty members)

1	Speaker Title Date	:	DSR Workshop Measuring Research Performance, Venue: B20, March 8-9, 2009
2	Speaker Title Date	:	Mr. M. Jarrar On n-fqp rings (1) March 15, 2009
3	Speaker Title Date	:	Prof. R. Wisbauer (Univ. Duesseldorf) Hopf modules and Hopf monads March 22, 2009
4	Speaker Title Date	:	Mr. Ben-Obaid *-compactly packedness and *-coprimely packedness March 29, 2009
5	Speaker Title Date	:	Prof. S.K. Jain (Ohio State Univ.) Commutative Rings whose homomorphic images are selfinjective April 05, 2009
6	Speaker	:	Prof. S.K. Jain (Ohio State Univ.)

	Title	:	Pre-selfinjective Rings
	Date	:	April 12, 2009
7	Speaker	:	Mr. M. Jarrar
	Title	:	On n-fqp rings (2)
	Date	:	April 19, 2009
8	Speaker	:	Mr. A. Mimouni
	Title	:	On the cardinality of star operations on an integral domain
	Date	:	May 03, 2009
9	Speaker	:	Dr. J. Abuihlail
	Title	:	On the coprime spectrum of modules over commutative rings
	Date	:	May 10, 2009
10	Speaker	:	Hajjazi, A.
	Title	:	On quasi-projective modules over commutative rings
	Date	:	May 17, 2009

Physics Department

- Speaker : Dr. Saleh I. Al-Quraishi

Title : Synthesis of ZnO nanoparticle by New Microwave Combustion (MWC) Technique

Date : Sunday, 4 January 2009
- Speakers : Drs. Mousa Al-Mousa, Mohsen Tahoun, Jaffar Al-Teruik (Purchasing Dept.)

Title : Introduction to the usage of ERP system in Purchasing

Date : Sunday, 11 January 2009
- Speaker : Mr. Qasem Drmosh

Title : Pulsed Laser Ablation in Liquids: Applications in the Synthesis of Nano Structure Materials

Date : Sunday, 18 January 2009
- Speaker : Dr. I. M. Nasser

Title : Recent Applications of J-Matrix

Date : Sunday, 8 March 2009
- Speaker : Dr. Alaadin Bukhari (Director, Center for Environment and Water, RI, KFUPM)

Title : The Center for Environment and Water: An overview of research areas, capabilities, achievements, and challenges

Date : Sunday, 22 March 2009
- Speaker : Prof. Fida F. Al-Adel

Title : The Roman Empire, Beauty, Lutèce, Physics101 Laboratory and life style changes....

- Date : Sunday, 29 March 2009
7. Speaker : Dr. G.M. Hamada, Petroleum Engineering Department, KFUPM
 Title : Basics of Petroleum Engineering
 Date : Sunday, 12 April 2009
8. Speaker : Dr. N.A Tabet, Physics Department, KFUPM
 Title : “Research in Saudi Arabia: Bridging the Gaps”
 Date : Sunday, 10 May 2009
9. Speaker : Dr. F.Z. Khiari
 Title : The Standard Model in a Nutshell
 Date : Sunday, 17 May 2009
10. Speaker : Dr. M.S. Kariapper
 Title : Doing Homework Online
 Date : Sunday, 31 May 2009
11. Speaker : Mr. Abdurrahman Musazay
 Title : The Beauty of Optics; Reflections on Physics 211
 Date : 14 June 2009

Finance & Economics Department

1. Speaker: : Prof. Mansur Masih (Invited Lecture as the Head of Economics Research, Center of Research Excellence in Renewable Energy),
 Title : Price Dynamics of Different Types of Renewable Energy, Crude Oil, Natural Gas and Petrochemicals
 Date : May 9, 2009
- 2- Speaker: : Dr. Ramady M. (Invited Lecture/Speaker (Toastmasters International Conference), Al-Khobar.
 Title : “Credit and Financial Crisis: Implications for the Gulf And Expatriates”.
 Date : April 9-10, 2009.
- 3- Speakers : Dr. Khaled Albinali (Chairman), Dr. Mohamed Ramady, Dr. Bassam Hamdan, Dr. Ashraf Eid.
 Title : “The First Economic Forum Global Financial Crisis”,
 Date : June 17, 2009.
- 4- Speaker : Dr. Bassam Hamdan
 Title : “Professional Management of Small and Medium size enterprises”, Chamber of Commerce, Eastern Province (Asharqia Chamber), Al-Khobar.

- Date : June 9, 2009
- 5- Speaker : Dr. Talat Ulussever
 Title : “The Macroeconomic Effects of Interest Rate Liberalization”, The Case of Turkey (1) International Symposium on Sustainable Development Proceeding,
 Date : 2009
- 6- Speaker : Dr. Talat Ulussever
 Title : “A Welfare Policy Analysis in the Turkish Economy”, A Simulation Based Macroeconomic Application of the Deficit Financing Options(3). International Conference on Modeling, Simulation, and Applied Optimization Proceeding).
 Date : 2009

Physical Education Department

The Physical Education Department under the College of Applied and Supporting Studies organized the following academic activities:

1. Seminar for the Directors of Physical Education and Sports of Saudi University under Saudi Arabian Physical Education and Sport Federation on the development of sports at the university level.
2. Workshop on Health Education and Physical Education for the Department faculty.

The seminar for the Saudi Arabian Physical Education and Sports Federation was held on April 26, 2009 and the keynote speakers for the seminar from the Physical Education Department of KFUPM were as follows:

1. Dr. Abdulhameed Al Ameer -Coordinator for the Seminar
2. Dr. Moataz Hassanain- Chairman for the Department Committee/Event Coordinator
3. Dr. Syed Ibrahim - Presentation of UK Universities Sports Organization
4. Dr. Kaukab Azeem - Presentation on Indian Universities Sports System
5. Mr. John Allen - Presentation on American Universities Sports System
6. Mr. Hassan Al Moslim - Translation of the English version into Arabic

Dr. Tawfiq Adris AL Bakri of Saudi Arabian Sports Federation was the chair for the speakers from various Universities in Saudi Arabia. The following speakers gave their presentation.

1. Dr. Rashed Al Hamad
2. Dr. Ali Bu Saleh
3. Dr. Misfar Al Zahrani
4. Mr. Daifulah Al Thaqati
5. Mr. Abdulaziz Al Kahlid
6. Mr. Khalid Al Quraizi

The speakers gave their presentation in Arabic and highlighted issues pertaining to physical education and sports in Kingdom of Saudi Arabia especially at the university level. At the end of their presentation a panel discussion was chaired by Dr. Abdulhameed Al Ameer. Many important issues with regard to the university sports were deliberated in detail and important points were drafted for the growth and development of physical education and sports in Kingdom of Saudi Arabia.

REPORT OF THE WORKSHOP ON HEALTH EDUCATION AND PHYSICAL EDUCATION ORGANISED BY THE PHYSICAL EDUCATION DEPARTMENT ON 17TH AND 18TH JUNE 2009 AT BUILDING 36 (STADIUM)

The two day workshop on health education and physical education was inaugurated by Dr. Ismail Budawi, Dean , College of Applied and Supporting studies, KFUPM at 8.30 AM. The session was chaired by Dr. Abdulhameed Al Ameer, Chairman, Physical Education Department. The Dean while inaugurating the workshop was very magnanimous in lauding the efforts of the department for organizing such an event, which he remarked will pave way for reorienting and refreshing the knowledge in the profession. He also emphasized that such workshop will further strengthen the on going research work and motivate them for persuing new avenues in the area. He also highlighted the importance of such events in making the faculty to think new ideas and implement them for the benefit of the students.

Dr. Abdulhameed Al Ameer, the chairman of the Physical Education Department while welcoming all the members hoped that the faculty will make use of this opportunity to equip themselves with the latest knowledge in the profession and take interest to sharpen their arsenal for delivering the results. He lauded the help rendered by the authorities of the university especially by the dean for making the realization of the dreams of the department come true.

The Workshop was organized spread over two days with 4 sessions. After the inauguration the first session commenced with the topics which have been allotted to all most all the faculty members. The topics covered were the health issues which have been approved in the new syllabus.

The first speaker was Mr. Mohammed Hamdan, a faculty member who dealt with the General personal health i.e. teeth, skin, feet, clothes and sweat. He highlighted the ways and means of how to take care and the importance of the personal health, which was explained nicely. His presentation also included a model health questioner which was very innovative and highlighted the present status of the health of the responders. Dr. Kaukab Azeem was the next speaker who is an expert in Fitness and Health. He took the topic of Nutrition and explained in detail the intricacies involved in taking the balanced diet. His presentation was marvelous and every aspect of food was explained in a precise manner. Many innovative ideas connected with the reduction of calories and the fatty diet was briefly addressed. His presentation was appreciated by all the faculty members

Mr. John Allen the next speaker gave a presentation on the General Health and Fitness wherein he spoke about the body composition, how to calculate the Body Mass Index and the use of skin fold caliper in arriving at the fat percentage in the body. He also explained the variable of cardio vascular endurance and various step test involved in measuring it.

There was a break for Salah and after Salah, lunch was arranged for all the faculty members.

After a sumptuous lunch the second session commenced with Mr. Adewale Adejumo taking up the Addictive habits where the risks , prevention and management of smoking, alcohol and drugs was explained in detail. It was a good presentation and every detail of how to avoid the bad habits was made very clear.

The topic of Muscular strength, Endurance and Flexibility was taken up by Dr. Yahya Dauod and Mr. Ali Ibied, Dr. Yahya explained about the components of fitness and how they are to be developed. In the other half Mr. Ali Ibied gave the assessment of these variables through various test like free squats, push ups, sit ups, sit and reach, 50 meters runs and 550 meters run. The presentations were quite interesting. There was a break for Tea and prayer and the workshop resumed with the last two topics of the day.

Mr. Hasan Al Moslim took up the interesting topic of Obesity which is the bane of the present day world. Mr. Moslim explained about the importance, risks ,prevention and management of the obesity. He used the traditional method of teaching and was exemplary and interesting.It was one of the best presentations of the workshop

The next topic was on anatomy, introduction to different systems of the body, bone system, names of important bones their location and application to physical activity. Another important aspect which was covered was posture and its importance in daily life. The topic was presented by Dr. Syed Ibrahim. The session concluded with the above presentation.

The Second day commenced with the third session on Cardio pulmonary resuscitation, its importance, safety and techniques of implementation. Dr. Charles Yendork took the presentation and it was well explained . Before moving on to the CPR, Dr. Charles emphasized on the first aid and how it helps in saving the life of the individuals. He also informed about the feedback of the former students who could secure jobs because they had undertaken the CPR course at KFUPM. The next speaker was Mr. Hamed Abu Hilal on the subject of cholesterol and diabetes. The above two diseases are the most fatal and are causing havoc throughout the world.

Mr. Abu Hilal gave a wonderful presentation utilizing the Multimedia which had a profound effect on the participants. The risks , prevention and management of the above two diseases were clearly stated and understood.

The topic which was next in line was on joints, types and their movements along with the muscles, types of muscles, names of important muscles and their application to the physical activities. The presentation was given by Dr. Syed Ibrahim.

Mr. Hassan Al Moslim was the speaker who explained on the important issues like Blood pressure and heart rate. Mr. Hassan clearly stated the risks, prevention techniques and management of the above two aspects. He also gave the schedules of exercises for heart rate efficiency (Aerobics). His lecture was well taken by all the faculty as it was a very beautiful presentation.

After a break for prayer and tea the concluding session commenced with Dr. Moataz Hassnain presenting Sports Injuries in which he dealt with strains, sprains, contusions and other common injuries of skin and their treatments. He also clearly explained the topic with special reference to Knee joint. It was a very good effort and the presentation was very good.

In the concluding part Dr. Abdulhameed Al Ameer, the Chairman took the topic of evaluation procedures in Physical Education and Health Education. His presentation was innovative and fantastic. It was the best presentation of the workshop and well taken by all the participants. He talked on the motor learning and how evaluation has to be carried in the above domain.

In the end the workshop was an eye opener for all the faculty members and everyone appreciated the outcome of the event. The chairman expressed his happiness and informed that such workshop will be an annual feature of the department. He also said that the presentations given by the faculty will be collected, edited and a handout will be prepared to be circulated to all department faculty members and the students. The workshop concluded on a happy note.

13. SEMINARS OFFERED BY OUTSIDE SPEAKERS IN THE UNIVERSITY

Petroleum Engineering Department

1. Speaker : Mr. Maher Mashhadi, Geo-Steering Operation Center Coordinator, Saudi Aramco
 Topic : Geo-steering Horizontal Wells in GOC
 Date : 23rd March 2009

2. Speaker : Dr. Taha M. Okasha Special Core Analysis Group Leader EXPEC Advanced Research Center, Saudi Aramco
 Topic : Investigation of the Effect of Temperature and Pressure on Interfacial Tension and wettability of Shu'aiba Reservoir
 Date : 31st March 2009

3. Speaker : Dr. Ali Ghalambor, Professor & Head of the Department of Petroleum Engineering, University of Louisiana at Lafayette
 Topic : "Underbalanced Drilling: Challenges and Future"
 Date : 21st April 2009

4. Speaker : Dr. Frank F. Chang, Program Leader, Schlumberger Dhahran Carbonate Research Center
 Topic : "Optimizing Well Productivity by Controlling Acid Dissolution Pattern during Matrix Acidizing of Carbonate Reservoirs"
 Date : 19th May 2009

5. Speaker : Mr. Mohammed Ali Athar, Senior Project Manager, Schlumberger
 Topic : "Overview of Completion Design Process"
 Date : 26th May 2009

6. Speaker : Mr. Saeed M. Al-Mubarak, Supervisor in the Southern Area Reservoir Management Department, Saudi Aramco
 Topic : "Management of Intelligent Fields & Intelligent Wells"
 Date : 9th June 2009

Department of General Studies

1. Speaker : Prof. Viktor Gecas. Head of the Department of Sociology, Purdue University, USA.
 Topic : Importance of Humanities and Social Sciences for Science and Engineering Majors: Purdue Experience.
 Date : 19.10.2008

Chemistry Department

1. Speaker : Dr. M. Ishaque Khan, Asspcoate Dean, Illinois Institute of Technology, Chicago, USA
 Title : Design An Development of Functional Nanostructured materials: Potentials and promise to industrial and environmental challenges.
 Date : 17 March, 2009

2. Speaker : Dr. Mauro Iannelli, Global Product Manager, Synthesis Division at Milestone s.r.l, ITALY
 Title : The Use of Microwave Irradiation to Promote and Enhance Chemical Reactions: An Overview.
 Date : 07 April, 2009

3. Speaker : Dr. Tokeer Ahmed, Assistant Professor Jamia Millia Islamia University, India
 Title : Physical Nanotechnology
 Date : 14th April, 2009

4. Speaker : Prof. V.K. Gupta, Department of Chemistry Indian Institute of Technology, Roorkee 247667, India
 Title : Use of Low Cot Adsorbent for waste water treatment- an Over view.
 Date : 19 April, 2009

5. Speaker : Prof. V.K. Gupta, Department of Chemistry Indian Institute of Technology, Roorkee 247667, India
 Title : Chemical Sensors for monitoring the Heavy metals, anions and drugs
 Date : 21 April, 2009

6. Speaker : Prof. Sadhan Kumar De. Government College of Engineering And Leather Technology, Calcutta, India
 Title : Rubber Recycling
 Date : 5 May, 2009

7. Speaker : Prof. Sadhan Kumar De. Government College of Engineering and Leather Technology, Calcutta, India
 Title : Flammability of Materials and Flame Retadants
 Date : 10 May, 2009

8. Speaker : Captain A. Munem M. Al-Janahi, Director (ROPME)
Bahrain
Title : "MEMAC – Role and Achievements in the Region
towards the Marine Environment Protection.
Date : 24 May, 2009

Earth Sciences Department

1. Speaker : Prof. Warren W. Wood (Michigan State University)
Title : Recent Advances in Understanding the Evolution of
UAE Coastal Sabkha
Date : March 3, 2009
2. Speaker : Prof. Arun Kumar (KFUPM Res. Inst.)
Title : Reclaimed Islands in the Arabian Gulf: An Assessment
of Potential Natural Hazards
Date : March 17, 2009
3. Speaker : Dr. Salem H. Shammari, (Saudi Aramco, Advanced
Research Center)
Title : Terminal fluvial facies and sequences, the Unayzah 'A'
reservoir, Saudi Arabia
Date : March 24, 2009
4. Speaker : Dr. Cedric Griffiths (CSIRO, Perth, Western Australia)
Title : Stratigraphic forward modelling for the Past, Present
and Future
Date : March 29, 2009
5. Speaker : Dr. Jack Bouska (BP Corporation, Muscat, Oman)
Title : Integrating seismic acquisition and processing
Date : March 31, 2009
6. Speaker : Dr. Iyad Zalmout (University of Michigan, Museum of
Paleontology)
Title : Paleontology & Evolution of Eocene Sea Cows
(Mammalia , Sirenia) of Wadi Al Hitan in the Fayum
Basin, Egypt
Date : April 07, 2009
7. Speaker : Dr. Yunlai Yang (EXPEC, Saudi Aamco)
Title : Quantification of mudstones' petrophysical properties
and the applications in pore pressure prediction

- Date : April 14, 2009
8. Speaker : Dr. Gharib Hamada (KFUPM Petr.. Eng Dept.,)
 Title : Basics of Petroleum Engineering
 Date : April 21, 2009
9. Speaker : Dr. Sasa Antonijevic (KFUPM Chemistry Dept.,)
 Title : Geochemistry of minerals viewed by solid-state NMR spectroscopy
 Date : May 5, 2009
10. Speaker : Dr. Saleh Al-Dossary (EASD, Saudi Aramco)
 Title : Estimating Incoherent Noise in Post-stack Seismic Data
 Date : May 12, 2009
11. Speaker : Dr Cvetan Sinadinovski (Saudi Aramco)
 Title : EGU 2009 - a Geophysical Synopsis
 Date : May 19, 2009
12. Speaker : Professor MZ Nashed (University of Central Florida, USA)
 Title : Inverse Problems in Geophysics
 Date : May 25, 2009
13. Speaker : Dr. Gharib Hamada (KFUPM, Petroleum. Engn. Dept.)
 Title : Identification of Hydrocarbon Movability from Resistivity Logs
 Date : May 26, 2009

Physics Department

1. Speaker : Dr. Ahmed Jellal
 Title : Introduction to Quantum Hall Effect and New Developments
 Date : Tuesday, 20 January 2009
2. Speaker : Mr. Ebel How
 Title #1 : Latest developments in Ti: Sapphire regenerative amplifier technology and transient spectrometers
 Title #2 : Latest developments in Ti: Sapphire Oscillators for Multi-photon Microscopy

- Date : Sunday, 25 January 2009
3. Speaker : Prof. Luciano MAIANI
Ex-Director, European Organization for Nuclear Research (CERN)
- Title : The large Hadrons Collider at CERN: Perspectives for Physics and for Applications
- Date : Sunday, 25 January 2009, 8:00 pm
4. Speaker : Mr. Ahmad A. Mahayri (Vice President, LMC, Jeddah)
- Title : From Laboratory to Society: The Economic and Social Consideration in Realizing the Promise of Nanotechnology.
- Date : Sunday, 15 March 2009
5. Speaker : Prof. Asghar Qadir (Centre for advanced Math. & Physics, Pakistan)
- Title : Gravitational Waves May be “further” than we think”?
- Date : Sunday, 5 April 2009
6. Speaker : Prof. Aslam Khan, COMSATS Institute, Pakistan
- Title : Dissociation of O₂ in low pressure He-O₂, Ne-O₂, and Ar-O₂ Glow Discharges
- Date : Monday, 6 April 2009
7. Speaker : Dr. Wamied Abdul Rahman, McGill University, Canada
- Title : Accurate Dosimetry in Photon Build-Up Region
- Date : Tuesday, 14 April 2009
8. Speaker : Dr. Johannes Buiting, Saudi Aramco, Dhahran
- Title : Estimating Water Saturation in Complex Carbonate Oil Reservoirs
- Date : Sunday, 19 April 2009
9. Speaker : Prof. Riazuddin, Centre for Advanced Mathematics & Physics, Pakistan
- Title : Can Applied Research Survive Without Basic Research?
- Date : Sunday, 10 May 2009