



الخطة الوطنية للعلوم والتقنية والإبتكار

The National Plan for Science, Technology and Innovation

List of Recommended Proposals – March 2012

تقنية المياه

Wat. Technology

Number	Code #	Proposal Title
1	12-WAT2451-02	Wastewater Remediation using Solar Energy and Semiconductor Oxide Nanostructures as Photocatalytic Smart Materials
2	12-WAT2453-02	Hydrogeological vulnerability and risk mapping of groundwater resources of the Saq and overlying aquifers, Saudi Arabia, using GIS and DRASTIC techniques
3	12-WAT2616-02	A Study of the Technical Feasibility of Geothermal Driven Membrane Distillation for the Desalination of Local Brackish Water
4	12-WAT2623-02	Innovative Nanofiltration Membranes for Water Desalination Using Smart ZnO Nanostructures

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Number	Code #	Proposal Title
1	12-INF2498-02	Modeling and Simulation of a Command, Control, Communications, Computers and Intelligence (C4I) Testbed
2	12-INF2533-02	A Privacy-Preserving Computer Forensic Framework for Data Acquisition, Evidence Mining, Presentation and Preservation in an Integrated Manner
3	12-INF2546-02	A Novel Low-power WBAN for Ubiquitous Health Monitoring with System Support for Coexistence
4	12-INF2573-02	Development and Evaluation of Virtual Manufacturing Assembly Simulation System (VMASS)
5	12-INF2574-02	Development of Comprehensive Analysis Network for Multitasking Assessment of Performance (CAN-MAP)
6	12-INF2582-02	The design and analysis of 3D educational content for learning and memorization processes
7	12-INF2613-02	Enabling Cloud-based Mobile Multimedia Services in KSA
8	12-INF2634-02	Digital Multimedia Forensics
9	12-INF2685-02	Development of A Direct Digital Manufacturing Methodology For Customized Mandible Implants

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Number	Code #	Proposal Title
1	12-BUI2620-02	Vulnerability Assessment and Mitigation Strategies against Terrorist Blast Attacks on Existing Precast Buildings in Saudi Arabia



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تقنية المواد المتقدمة

Adv. Technology

Number	Code #	Proposal Title
1	12-ADV2465-02	A study of the mechanical properties of newly developed cobalt-free, low-nickel maraging steel at high temperatures
2	12-ADV2591-02	Development of Strain-Hardening Cement-Based Composites with Short Polymer Fibers for Hot-Weather Concreting Utilizing Local Materials
3	12-ADV2611-02	MIXED MATRIX DUAL-LAYER NANOCOMPOSITE HOLLOW-FIBER MEMBRANES FOR DESALINATION
4	12-ADV2619-02	Effectiveness of hybrid-fibers in improving the impact response of high strength concrete beams and slabs

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التقنيات الزراعية
Agr. Technology

Number	Code #	Proposal Title
1	12-AGR2487-02	Application of Nanotechnology in the Production of Halal Gelatin Derived from Camel Carcasses
2	12-AGR2494-02	Production and Characterization of Carotenoid Nanodispersions for Food Applications
3	12-AGR2495-02	Distiller's Dried Grains with Solubles as nontraditional feed for broiler, camel and lamb fattening
4	12-AGR2508-02	Improving the tolerance of vegetable crops to salinity and drought stresses using a grafting strategy
5	12-AGR2510-02	Spatiotemporal analysis of honey production and forage potential mapping using remote sensing and GIS technologies
6	12-AGR2540-02	Evaluation of the Heat Tolerance and Growth Performance of Aardi and Damascus Crossbred Goats
7	12-AGR2552-02	Bioprospecting Native Saudi Arabian Plants with an Emphasis on Phytochemistry and Bioactivity Against the Key Pest of Date Palm, Rhynchophorus ferrugineus Oliv., and Date Fruits Pest, Ephemesthia cautella Wik
8	12-AGR2554-02	"Elucidation of the sex pheromone biosynthetic pathways in Ephemesthia cautella and Batrachedra amydraula by molecular characterization and functional gene expression and the development of a viable trapping system for Saudi Arabian date manufacturers
9	12-AGR2555-02	Analysis of genetic diversity and genome-wide structure of indigenous chickens from the Kingdom of Saudi Arabia: origin, conservation and utilization
10	12-AGR2571-02	Increase utilization of highly degradable protein sources in the rumen of ruminant animals using acacia
11	12-AGR2575-02	Quantitative assessment of non-point source pollutants using an integrated system of GIS and transport models
12	12-AGR2594-02	TO STUDY THE OCCURRENCE OF CARCINOGENIC HETEROCYCLIC AMINES IN COOKED CAMEL MEAT FROM THE KINGDOM OF SAUDI ARABIA
13	12-AGR2606-02	Assessing calpain and calpastatin levels in camel meat for their effect on palatability
14	12-AGR2607-02	Mycorrhizas and soil salinity: rehabilitation of degraded salt lands and improving the tolerance and quality of some ornamental, aromatic and medicinal plants in Saudi Arabia.

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التقنيات الحيوية

Bio. Technology

Number	Code #	Proposal Title
1	11-BIO1588-02	Studies on enterotoxemia in livestock in the Kingdom of Saudi Arabia.
2	12-BIO2483-02	Identifying the molecular targets underlying the camel whey protein nanoparticles mediated restoration of the normal inflammatory and proliferation responses during cutaneous wound healing in diabetic models
3	12-BIO2493-02	Molecular Characterization Of Major Foodborne Pathogens Associated with Food of Animal origin and Their Potential Transmission to Humans in the KSA.
4	12-BIO2515-02	Generation and analysis of recombinant antibodies for use in the engineering of resistance against zucchini yellow mosaic potyvirus (ZYMV)
5	12-BIO2590-02	Elucidation of the mutational landscape of colorectal cancers to design evidence-based targeted therapy in Saudi patients
6	12-BIO2605-02	Novel Efficient Algorithms and Tools for Motif Localization and Discovery (NeatMLD) on a Genome Scale
7	12-BIO2609-02	Molecular mechanism of bee venom and propolis-accelerated wound healing in diabetic mice
8	12-BIO2630-02	Profiling the secondary metabolites of actinomycetes isolated from the Saudi coastal habitats for discovery of new anti-cancer drugs
9	12-BIO2646-02	Association of gene polymorphisms in the PTH, RANKL and calcium metabolism pathways in Saudi subjects with osteoporosis

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تقنية البيئة
Env.Technology.

Number	Code #	Proposal Title
1	12-ENV2484-02	Insect Biodiversity in the Jabal Shada Al-A'Ala and Raydah Protected Areas in Southwestern Saudi Arabia
2	12-ENV2528-02	Molecular detection of viruses and bacteria in treated wastewater and in well water in the governorate of Al Riyadh, Saudi Arabia
3	12-ENV2564-02	Mechanisms of the control of cuticular transpiration in Saudi Arabian desert plants
4	12-ENV2569-02	Wetland monitoring in the Kingdom of Saudi Arabia: a tool for the assessment of global changes
5	12-ENV2581-02	A Holistic Ecosystem Approach for the Sustainable Development of Fragile Agro-ecosystems: A case study of the Al-Kharj Ecosystem, Saudi Arabia
6	12-ENV2583-02	GEO-ENVIRONMENTAL BENIGN CHARACTERIZATION OF SEMI-ARID SOILS - A study aimed at deriving potential benefits from using locally available materials
7	12-ENV2585-02	Bio-monitoring of persistent organic pollutants in breast milk from lactating mothers in Kingdom of Saudi Arabia
8	12-ENV2660-02	Distribution, Sources and Factors Influencing the Dissipation of Polyaromatic Hydrocarbons in Urban Soils
9	12-ENV2680-02	Conformational and vibrational analysis of dibenzo-18-crown-6 and some of its alkali metal cation complexes

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$$\left[\frac{-\hbar^2}{2m} \nabla^2 + V \right] \Psi = i \hbar \frac{\partial}{\partial t} \Psi$$

برنامج الرياضيات والفيزياء
Mat. Program

Number	Code #	Proposal Title
1	12-MAT2461-02	Development of a novel gamma camera for applied and fundamental research
2	12-MAT2610-02	Detection Setup for the Study of Fusion and Deep-Inelastic Nuclear Reactions using radioactive beams
3	12-MAT2650-02	Nuclear Structure Experiments and Instrumentation Development within PRESPEC
4	12-MAT2658-02	Splitting Methods for Monotone Operators with Applications
5	12-MAT2703-02	Nonlinear Analysis Methods and their Applications to Economics and Finance

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Number	Code #	Proposal Title
1	11-MED1761-02	Evaluation of new bifunctional chelates for the development of Cu-64-based radiopharmaceuticals
2	12-MED2439-02	Design, Synthesis and Biological Evaluation of Diarylheptanoids and Their Derivatives for the Development of New Anti-Cancer Agents
3	12-MED2440-02	Liver pathology in morbidly obese children and adolescents after undergoing laparoscopic sleeve gastrectomy
4	12-MED2443-02	Investigating the deregulation of toll-like receptors, pro-inflammatory cytokines and cationic peptides by tobacco smoke and its role in promoting oral cancer in humans
5	12-MED2446-02	Synthesis of acyclo-C-nucleosides as potential antiviral agents and enzyme inhibitors
6	12-MED2463-02	Assessing causality of the association between exercise and neurocognitive gains: a pioneer translational research study in the Kingdom of Saudi Arabia
7	12-MED2469-02	Vitamin D and novel biomarkers of vascular inflammation and endothelial dysfunction in obesity
8	12-MED2474-02	Automatic Voice Pathology Assessment
9	12-MED2476-02	Effects of the fibrate-induced production of endogenous epoxyeicosatrienoic acids (EETs) on cardiovascular and metabolic dysfunction in obese rats
10	12-MED2491-02	Bioprospection of Arabian Medicinal Plants as Antiglycation Agents for the Development of a Novel Molecular Therapeutic Approach for Diabetes
11	12-MED2503-02	Design, synthesis and anticancer activities of novel luotonin-inspired hybrid heterocycles
12	12-MED2524-02	Design of an effective formulation for the oral administration of the anticholesterol drug, fenofibrate
13	12-MED2525-02	The effects of Apelin, the Novel Endogenous Ligand of the Orphan Receptor APJ, on myocardial function and structure after Resuscitation of Hemorrhagic Shock in Rats and possible the involvement of inflammatory pathways
14	12-MED2535-02	Multifunctional Targeted Nanocarriers for Breast Cancer Stem Cells: Ultrasensitive Noninvasive Imaging for Better and Earlier Diagnosis
15	12-MED2536-02	Novel nanocarriers for the direct and efficient delivery of blocking antibodies to asthmatic lungs: noninvasive tracking using MRI
16	12-MED2543-02	Immunopathogenesis of uveitis

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17	12-MED2563-02	The probability of transforming erythrocytes from a protective to a destructive role in dyslipidemia: the effect of statin nano-particles on the antioxidant/oxidant balance
18	12-MED2565-02	Premature biological aging in Saudi adults with Type 2 diabetes and the influence of endotoxemia
19	12-MED2580-02	Study of the anti-breast-cancer potential of two aspirin analogs: 2-hydroxybenzoate zinc (2-HBZn) and 4-hydroxy benzoate zinc (4-HBZn)
20	12-MED2596-02	Investigating the potential use of three positron annihilation as a diagnostic system for clinical tumor hypoxia analysis with positron emission tomography imaging
21	12-MED2602-02	The potential effect of the transcription factor Nrf2 on inflammatory response in adipose tissues
22	12-MED2604-02	The role of high-mobility group box 1 protein in the development of diabetic retinopathy
23	12-MED2621-02	Registry of congenital and genetic neuro-ophthalmic diseases in Saudi Arabia
24	12-MED2622-02	Targeted sequencing of crucial genes in distinct signaling pathways in the breast cancers of Saudi patients: A step toward personalized genomics
25	12-MED2648-02	Molecular cytogenetic evaluation of the mutagenic effects of anthracyclines in combination with bisdioxopiperazines
26	12-MED2652-02	The role of Rho family GTPases in human cytomegalovirus (HCMV) infection and pathogenesis
27	12-MED2670-02	Designing theranostic aptamers for Bcl-2 inhibition and phosphatidylserine detection to target apoptosis in cancer treatment
28	12-MED2681-02	Photolysis of chemically sensitized Leishmania for therapy and prophylaxis
29	12-MED2687-02	Women in Saudi Arabia Health Examination Survey (WISHES)



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تقنية النانو

Nan. Technology

Number	Code #	Proposal Title
1	12-NAN2490-02	Development of Nanobiosensors for Rapid Detection and Diagnosis of Brucellosis
2	12-NAN2529-02	Towards ultimate spatial resolution analysis of the optical properties of semiconductor nanostructures
3	12-NAN2537-02	Design, development and evaluation of a nano- transdermal (needle-free) allergy test for diagnosis of type-1 hypersensitivity
4	12-NAN2541-02	Fabrication of Electrospun Bio-Nanofibers for Oil Spill Leakage Treatment along the eastern coast of Saudi Arabia
5	12-NAN2544-02	Photothermally Triggered Drug Delivery from Core/Shell Mesoporous Nanoparticles for Targeted Cancer Therapy
6	12-NAN2551-02	Doped and Undoped Nanostructured Metal Oxides for the Detection of Hazardous Gases
7	12-NAN2576-02	Novel Food Fortification Systems to Combat Vitamin D Deficiency in Saudi Arabia
8	12-NAN2600-02	Fabrication of novel drug delivery systems via encapsulation through nano-pores of natural biopolymers
9	12-NAN2635-02	Production of superior strength Aluminum Alloys for High-Temperature Applications using Mechanical Alloying
10	12-NAN2672-02	Spin caloritronic dynamics in ferromagnetic thin films and magnetic nanostructures

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تقنية الإلكترونيات

ELE. Technology

Number	Code #	Proposal Title
1	12-ELE2462-02	Radio Frequency Identification (RFID) Antennas for Oil, Mining Services, Utility Companies and Other Applications
2	12-ELE2506-02	Overall Performance Optimization of Deadlock Control in Flexible Manufacturing Systems
3	12-ELE2559-02	Development of a multistatic multi-waveform passive radar system (MMPRS) for ground and aerial target detection
4	12-ELE2628-02	Characterization of ultrafast white laser light generated via supercontinuum in a hollow-fiber waveguide.

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Number	Code #	Proposal Title
1	12-PET2614-02	New hierarchical zeolite catalysts for transformations of olefins, alcohol and ketones