KING ABDULLAH II FUND FOR DEVELOPMENT
صندوق الملك عبدالله الثاني للتنمية

الجامعة الأردنية
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عطوفة الأستاذ الدكتور اخليف الطراونة الأكرم

رئيس الجامعة الأردنية

الموضوع: دعم مشاريع التخرج لعام ٢٠١٥-٢٠١٦

تحية طيبة وبعد ،،،

باسمي ونيابة عن رئيس وأعضاء مجلس أمناء صندوق الملك عبدالله الثاني للتنمية والكادر العامل فيه نشكركم جزيل الشكر على تعاونكم معنا ودعمكم لنشاطات الصندوق.

في إطار التعاون القائم بيننا من خلال برنامج مشاريع التخرج الذي ينفذه صندوق الملك عبدالله الثاني للتنمية بالتعاون مع مركز الملك عبدالله الثاني للتصميم والتطوير بهدف دعم الشباب الأردني في مجال البحث العلمي والتقني في الأردن، وحيث أن الصندوق سيبدأ باستقبال طلبات دعم مشاريع التخرج للطلبة المتميزين في جميع المجالات اعتباراً من تاريخ ٢٠١٥/٩/٣٠ وحتى ٢٠١٥/١١/٣٠.

نرجو من عطوفتكم التكرم بالموافقة على التعميم لرؤساء الأقسام وأعضاء الهيئة التدريسية والمعنيين في مختلف الكليات لتحفيز الطلبة على التقدم بطلبات لدعم المشاريع المتميزة.

علماً بأننا نرفق لعطوفتكم تفاصيل البرنامج.

وتفضلوا بقبول فائق الاحترام ،،،،

صائب الحسن

مدير الصندوق

د. مدير مركز الملك عبدالله الثاني للتصميم والتطوير
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www.kafd.jo

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برنامج دعم مشاريع التخرج

١- **المحاور التي سيدعمها البرنامج هذا العام:**

- المشاريع الحرة وهي مشاريع يقررها الاساتذة الكرام بالاتفاق مع طلبتهم.
- مشاريع مقترحة من برنامج تمويل مشاريع التخرج لطلبة الجامعات / صندوق الملك عبدالله الثاني للتنمية (KAFD) حيث نرفق المقترحات.
- مشاريع مقترحة من قبل مركز الملك عبدالله الثاني للتصميم والتطوير (KADDB) حيث نرفق المقترحات.

٢- **شروط البرنامج:**

- أن يكون المشروع مخصصاً لغايات التخرج في الجامعة وذو طبيعة إبداعية تطبيقية.
- أن لا يتجاوز التمويل اللازم للمشروع خمسة آلاف دينار أردني.
- أن تكون معدلات الطلبة جيد فما فوق.
- أن لا يقل عدد الطلبة المشاركين في تنفيذ المشروع عن أثنين في مرحلة البكالوريوس.
- أن تكون مدة العمل بالمشروع ستة شهور كحد أدنى.

٣- **آلية استقبال وتقييم الطلبات والذي تعتمد على مبدأ التنافسية:**

- سيتم استقبال طلبات المشاريع من تاريخ ٢٠١٥/٩/٣٠ ولغاية ٢٠١٥/١١/٣٠، ويمكن تسليم الطلبات إلى مكاتب التأهيل الوظيفي المتواجدة بالجامعات، او تسليمهم في مكتب الجامعة الأردنية / مركز الملك عبدالله الثاني للتصميم والتطوير أو عن طريق البريد الالكتروني (Ghada@kafd.jo).
- سيتم دراسة الطلبات من قبل لجنة مكونة من صندوق الملك عبدالله الثاني للتنمية ولجنة من مركز الملك عبدالله الثاني للتصميم والتطوير، وطلب إيجاز (Ppt presentation) للمشاريع المقدمة.
- سيعتمد اختيار المشاريع التي سيتم دعمها على وضوح ودقة الطلب المقدم بالإضافة إلى التجدد والإبداع والفائدة التطبيقية للمشروع وبشكل تنافسي.

للمزيد من المعلومات يرجى الاتصال/ صندوق الملك عبدالله الثاني للتنمية – هاتف رقم ٠٧٧-٦٧٢٩٦٩٨ / ٠٦-٥٣٤٥٥٥٩.
يمكنكم تقديم الطلبات من خلال الرابط : **kafd.jo/GradApp.doc**

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KAFD Projects

Attachment # 2

	General Engineering	Hydrogen Generation Using Solar Power (Heat and Photovoltaic)	Considering that the world is gearing-up for the Hydrogen economy for mobility, research in Hydrogen generation is a priority using renewable energy, and developing efficient and fast techniques for mass production of Hydrogen by innovative methods.
		Fuel Cells	Designing Fuel cell battery to have an energy density of more than 1000 j/g or to provide a voltage of 16 volts, continuous current of 60 A and with a capacity of more than 15 A/h within a weight of about 500 gram. The aim of this battery is to improve the endurance of the UAV.
		Specialist Vehicles	Special vehicles design and construction (vehicles designed for specific applications, and niche markets).
		Solar Water Heating	Design and construction of novel solar collectors for water heating, and other applications.
		Waste Heat Recovery Systems	Vehicle exhausts heat or fuel cell heat utilization, other wasted heat sources.
		Robotics	Robotics in all its forms (Un-manned Arial, Ground, Marine vehicles, service robots, de-mining robots, etc...)
		Solar Air-Conditioning Systems	Using solar energy in air-conditioning systems can save Jordan millions of dollars in electricity bills as the use of air conditioners is rising in the country due to extreme temperatures in the summer; furthermore, air-conditioning will help create better working conditions, hence raise the efficiency of workers; solar energy can provide solutions for cooling buildings, schools, etc... at minimum cost.
		Hybrid Solar-Diesel Heating Systems	Using solar energy to augment diesel heating systems can save Jordan millions of dollars in fuel bills due to the abundance of solar power in the country.
		Water	Water collection, purification, filtration, desalination, and electrolysis technologies.
		Automotive	Tune Engine management system to provide better performance and fuel economy for the vehicles in Jordan.
	Agriculture	Desert Sand	Converting desert sand into fertile sand will reduce desert areas by changing the desert into a green habitat, consequently, producing food, energy, desalinated water and reducing carbon dioxide.
		Algae	Conversion of salt water Algae into oils, fuels, food etc...
	Architecture	Design Centre	Designing a building for a national design center.
		Innovation Centre	Designing a building for a national innovation center.
	Development of Previous Projects	Autonomous Vehicles	Developing the two University of Jordan autonomous vehicles.
		Hybrid Vehicle	Developing the Series Hybrid Electric Vehicle/Balqa Uni.

	Re-Cycling	Robot Arm	Devolve the Arm with 6 axes to be mounted on a robot that is capable of carrying 15 Kg at fully extended position. We are seeking for an interchangeable arm for the one already installed on an EOD.
		Waste Materials	Recycling; e.g. Plastic water bottles, Supermarket shopping bags, Electronic components for extraction of precious metals, etc...
	Other Suggested Faculties and programs	Arts, Social Work, Psychology, Geography, Counseling and Special Education, Visual Arts, Music, Theater Arts, Cultural Resources Management and Conservation.	Innovative projects and distinctive ideas are always welcomed.

KADDB Projects

Attachment # 1

No	Topic	Name	Specifications
1	T&E	high sound isolation system	Find ways of solving acoustical problem for KADDB indoor firing range by providing high sound isolation system scientifically designed to absorb the firing noise.
2	Electrical	Design an isolated DC to DC converter	o This converter must be single input (variable range 10V-30V), multi 5-separated outputs (every output is regulated 15V), with nominal 0.5A for each. o The regulation output voltage level must be due to any input voltage variation or any output loading/unloading variation. o The design must be in module-compact shape and weight as can as possible.
3		Design a Sony VISCA protocol GUI program	The main purpose of this project to design an executable application (windows based) with a functional GUI, including all serial commands of VISCA protocol and test it on FCB-EX (like FCB-EX1010) Sony cameras with interfaced by serial (RS232) interface board.
4		Design an embedded controllable video overlaid reticule	o This design must be able to draw and overlay (lines and circles) on a stream of video (analogue composite video signal type) in real time, the drawing must be commanded and refreshed actively by serial RS232 interface. o The design must be in module-compact shape and weight as can as possible
5		Design an embedded gyro position and position accelerometer feedback 3-axes sensor	Using a commercial low cost gyros, it's required to design a 3D angular position sensor, fast response, low drift and noise immunity ,the output data must be sent and packed serially.Using a commercial low cost accelerometer, it's required to design a 3D linear position sensor, fast response, low drift and noise- immunity, the output data must be sent and packed Serially.
6	Embedded	Implementation software and hardware embedded virtual fence	
7		Autonomous follower	
8		Android Application	Design application for Android Tablets. This application has to receive video and audio from external source and some other data including GPS and sensors to be broadcasting on a web.
9	Robotics & Mechatronics	Under Vehicle Scanning System UVSS.	
10		Integration of Explosive Detectors to the Unmanned Vehicle (UVM) manufactured by KAADB	
11		Hybrid ROKON	To convert the ROKON motorcycle to hybrid system and to increase it is endurance

	Communication	Radio relay transportable communication mesh (RRTCM)	
		Laser receiver for gun shoot training system	The proposed project replaces the real shooting by laser shooting for the purpose of training the receiver body emulates a real target that interacts with the laser beam at the moment of hitting.
		Wireless Mesh Network (WMN) for military applications using UHF frequency Band mainly to defeat the line of site for the unmanned ground vehicles UAV's	This will also include the antenna design and new wideband transmission schemes In order to achieve higher transmission rate and broader coverage.
		Smart Grid Metering Based on IP and standard Web services to better manage and control energy	
		Multi band Room Jammer system	
	Mechanical / Aerodynamics	Fixed wing UAV	Sizing and Structural design for a mini fixed wing UAV. This UAV has a total weight ranging from 3-8 kg with 1-3 m wing span. Selection of several configurations as planar, monoplane, box shape ....etc. is highly recommended to have a comparison between them. In addition, the 3D model, structural and fluid dynamics calculations and Simulations are required.
		Dynamic Modeling and System Identification for Rotor Aircraft Phase II	KAFD already has Helicopter model (Maxi Joker 2) and it is recommended to have a project aiming to build a mathematical model on Simulink, and perform tests in order to identify the aerodynamic coefficients.
	Mechanical	Design and build induction hardening machine 10kw	
		Design and build handling equipment for one of our specific turning machine FD125	
		Tire stiffness and damping measuring device	Design a mechanical device to define stiffness and damping ratio values for a vehicle tire, it should be suitable for different tires sizes (tire width, outer diameter, pressure ...).
		CVT (Continues Variable Transmission)	Design a continues variable transmission, the transmission should provide High – low- reverse functionality and to be integrated with engines up to 100 N/m & 100 Hp, also the gear weight should not exceed 30kg.
	Physics	Exothermic materials	Utilize the Exothermic materials to be used as a heat energy source for KADDB ready meals.
		Dowsing tool for proposed of identification and characterization of metals	

	Mechanical Simulation	Impact simulation of 7.62mm projectile into steel plate	To generate a true 3D solid model of the 7.62mm FMJ ball bullet & prepare the model for FEA . To generate & run the FEA setup in order to study the different cases of the target & compare analysis results with Corresponding firing trials. The target parameters to be studied are: Hardness, Tensile Strength & chemical structures (Mild steel, Armox 370T, Armox 500T).
		Perforated Armor Design for Small Caliber Ammunition	To generate a true 3D solid model of the 5.56 & 7.62mm FMJ ball bullets & prepare the model for FEA . To generate & run the FEA setup in order to study the different cases of the target & compare analysis results with corresponding firing trials. The target to be studied is Armox 500T.
		Simple Shaped Charge formation Simulation	To determine the geometrical parameters affecting the behavior of the SC. To generate true 3D solid models of the conical cupper shaped charges & prepare the model for FEA . To generate & run the FEA setup in order to study the different cases of the SCs.
	IT	Face recognition using image processing	Individual recognition using image processing and detecting moving object and local databases through various surveillance cams
		Text encryption using steganography algorithms	Encrypting data in images for the purpose of data security using steganography algorithms
		Object tracking using a daytime camera	Tracking moving objects and processing the images from visual source to lock and track the desired object
		Smart Camera	**Phase one:** Objects recognition in a high quality image using image processing tools and programing to analyze the images and recognize living organisms from other objects and identify objects (is it a car or a tank or tree). **Phase two:** Face/identity recognition. **Phase three:** Object character recognition for Arabic letters. **phase four:** build a solution of video cams to identify and track moving objects passing through the range of a camera and store the path of the object on a database.
		Traffic Flow Conditions	Find a solution to identify traffic flow conditions in relation to traffic jam, accidents or closing of streets, in order to find alternative routes/streets or provide the expected time to pass a distance on specified routes/streets.
		filtering & estimation	Sensor fusion of Inertial sensors to estimate angular acceleration. (filtering & estimation)
		UAV navigation	Vision based navigation for UAV
		Object tracking (open CV under Linux)	Object tracking using open CV under Linux)
		Position Control	Position control of brushless motor
		control allocation technique	Implementation of "control allocation technique" in variable pitch quad rotor
		Laser Range finder	Long Distance allocation using laser system