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Prefacio

Con el objetivo de ofrecer a los estudiantes de educación superior y posgrado del país un espacio de divulgación del conocimiento científico y tecnológico y contribuir al fortalecimiento del desarrollo profesional de manera homogénea y articulada el Instituto Tecnológico de Pachuca será sede del 4to. Congreso Nacional Multidisciplinario de Educación, Ciencia y Tecnología, CONAMTEC, contribuyendo así al logro de los objetivos del Gobierno Federal mismos que han sido plasmados en el tercer eje rector "México con Educación de Calidad" del PND 2013-2018, y en particular el Objetivo 3.4. "Impulsar la ciencia, la tecnología y la innovación en el Marco Institucional de Planeación", definido en el PIID 2013-2018 del Tecnológico Nacional de México y PIID del Instituto Tecnológico de Pachuca 2013- 2018.

Siendo pioneros de la Educación Superior Tecnológica en el Estado de Hidalgo, conscientes de los avances científicos y tecnológicos actuales y la evolución constante de los mismos, a través del 4to. CONAMTEC deseamos fortalecer en la entidad y en el país el potencial científico-tecnológico y el emprendedurismo de estudiantes y egresados mediante una formación integral que promueva la responsabilidad y el compromiso social en beneficio del desarrollo nacional. Este volumen II-2018 contiene 65 participaciones arbitradas que se ocupan en Administración, Ingeniería en Sistemas Computacionales, Arquitectura, Ingeniería Mecánica, Investigación Educativa a nivel Licenciatura o Posgrado, Ingeniería Industrial, Ingeniería Química, Ingeniería Civil, Ingeniería Eléctrica, Ingeniería en Tecnologías de la Información y Comunicaciones, Ingeniería en Gestión Empresarial, Ingeniería en Diseño Industrial, elegidos de entre las contribuciones, reunimos algunos investigadores y estudiantes de posgrado, a partir de 21 estados de México.

Quisiéramos agradecer a los revisores anónimos por sus informes y muchos otros que contribuyeron enormemente para la publicación en éstos procedimientos repasando los manuscritos que fueron sometidos. Finalmente, deseamos expresar nuestra gratitud al Instituto Tecnológico de Pachuca en el proceso de preparar esta edición que podrás consultar en <http://ecorfan.org/collections.php>

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1 Ciencias Sociales

El ajo como oportunidad de negocio para productores de la región en Baja California Sur

Garlic as a business opportunity for producers in the region in Baja California Sur

MEZA-ARELLANO, Antonio, PERALTA-AMADOR, Luis Rene and HERNÁNDEZ-VALENZUELA, Juan Carlos

Instituto Tecnológico Superior de Mulegé

ID 1st Author: *Antonio Meza Arellano* / **ORCID ID:** 0000-0002-6553-8392, **Researcher ID Thomson:** P-6194-2018, **CVU CONACYT ID:** 4049918

ID 1st Coauthor *Luis Rene Peralta Amador* / **ORCID ID:** 0000-0002-0665-5556, **Researcher ID Thomson:** T-7021-2018, **CVU CONACYT ID:** 948834

ID 2nd Coauthor: *Juan Carlos Hernández Valenzuela* / **ORCID:** 0000-0003-3523-232, **Researcher ID Thomson:** P-4344-2018, **CVU CONACYT ID:** 278735

Abstract

This article shows the results obtained from the market study that was carried out to the inhabitants of Santa Rosalia, in order to market a product as it is a garlic paste to season meals represents a good business opportunity for producers of garlic of the region and the deductive-exploratory method was used to collect, analyze and interpret the information obtained through tools such as interviews, surveys and direct observation, taking a considerable sample of the population of the locality, thus, according to the results obtained, the initiative was taken to propose a project that will take these garlicks and transform them through an artisanal process to create a garlic paste that can be offered in the market and replace the traditional seasonings and This way, create a business opportunity for producers of this raw material, which is given in large quantity and quality, since that once processed could generate greater profits than if they sell it fresh, concluding that the producer has in his hands a new product to be marketed in said location.

Keywords

Producers, Business opportunity, Consumer

Rey paté como idea emprendedora en Santa Rosalía Baja California Sur

Rey Paté as an entrepreneurial idea in Santa Rosalia Baja California Sur

HERNANDEZ-VALENZUELA, Juan Carlos, BASTIDA-ROMERO, María Karen, ARCE-ZUÑIGA, Martha and OLIVARES-CONTRERAS, Jesus Osvaldo

Instituto Tecnológico Superior de Mulegé

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ID 1st Coauthor: *Maria Karen, Bastida-Romero* / **ORC ID:** 0000-0002-7440-1582, **Researcher ID Thomson:** T-7118-2018, **CVU CONACYT ID:** 948888

ID 2nd Coauthor: *Martha, Arce-Zuñiga* / **ORC ID:** 0000-0002-9550-5057, **Researcher ID Thomson:** T-8622-2018, **CVU CONACYT ID :**949166

ID 3rd Coauthor: *Jesus Osvaldo, Olivares-Contreras* / **ORC ID:** 0000-0003-1352-0761, **Researcher ID Thomson:** T-7651-2018, **CVU CONACYT ID:** 948906

Abstract

This article shows the results of a market study that was conducted in the city of Santa Rosalía, to determine the tastes and preferences of consumers about the creation of a new product called "Rey Paté", which consists of a line of snacks pâté style in three different presentations through horse mackerel fish as the main ingredient. In this study an exploratory and descriptive research was developed, using as a tool the survey, the interview and the direct observation, which was carried out to a sample population of the city, to gather the information, which later led to conclusions and improvement proposals for the product. Also, the purpose of this research is the creation of this product, to implement the daily consumption of healthy snacks through the horse mackerel in the current population of the town, in the same way to know the specific tastes of the population to create the product suitable for your needs, creating strategies that meet your expectations and thus achieve an optimal positioning in the market.

Keywords

Paté, Horse mackerel, Process, Consumption, Needs

Análisis, necesidades y preferencias del consumidor para la creación de una empresa servicios de limpieza

Analysis, needs and preferences of the consumer for the creation of a cleaning services company

HERNÁNDEZ-VALENZUELA, Juan Carlos, ROSAS-ARMENTA, Karla Alejandra, COVARRUBIAS-HERNÁNDEZ, Brenda y MEZA-ARELLANO, Antonio

Instituto Tecnológico Superior de Mulegé

ID 1st Author: *Juan Carlos, Hernández-Valenzuela* / **ORC ID:** 0000-0003-3523-232, **Researcher ID Thomson:** P-4344-2018, **CVU CONACYT ID:** 278735

ID 1st Coauthor: *Karla Alejandra, Rosas-Armenta* / **ORC ID:** 0000-0002-0665-5556, **Researcher ID Thomson:** T-7059-2018, **CVU CONACYT ID:** 825583

ID 2nd Coauthor: *Brenda, Covarrubias-Hernández* / **ORC ID:** 0000-0001-9214-5618, **Researcher ID Thomson:** T-7124-2018, **CVU CONACYT ID:** 948891

ID 3rd Coauthor: *Antonio, Meza-Arellano* / **ORC ID:** 0000-0002-6553-8392, **Researcher ID Thomson:** P-6194-2018, **CVU CONACYT ID:** 404918

Abstract

The present article shows the results obtained from the market study carried out to the residents of Santa Rosalía Baja California Sur, to determine the needs and preferences of the consumer for the creation of a company dedicated to provide cleaning services in homes and offices, obtaining information Of the opinions of the people in order to identify the needs and preferences of the client in the determination of cleaning services, the research method used was the deductive and exploratory method, was based on an analysis of the locality through the Population sample, where the tools to be used are the survey and the interview in which the substitution was made with data obtained from INEGI in 2014, determining that 374 surveys should be applied, taking as a reference 12 colonies of the population, 28 surveys in each of these, the same formula was used for interview, which det Ermino that 85 of the 102 most representative businesses of the locality should be applied, with this study can verify the acceptance that the client has towards a new company dedicated to provide cleaning services to homes and offices.

Keywords

Clients, Research, Cleaning, Acceptance

Estrategias de comercialización para empresas de artesanos en Hidalgo

Marketing strategies for artisan companies in Hidalgo

SANTIAGO-GUILLERMO, Mario, GARCÍA-DÍAZ, Patricia, ROJAS-RAUDA, Rosa I. y
MONTERRUBIO-CABRERA, Elisa

Instituto Tecnológico de Pachuca

ID 1st Author: *Mario, Santiago-Guillermo*

ID 1st Coauthor: *Patricia, García-Díaz* / **ORC ID:** 0000-0002-3264-1326

ID 2nd Coauthor: *Rosa I., Rojas-Rauda* / **ORC ID:** 0000-0002-2782-9279

ID 3rd Coauthor: *Elisa, Monterrubio Cabrera* / **ORC ID:** 0000-0002-8656-6245

Abstract

In this research work, the problem of marketing strategies yack in new products for companies engaged in handicrafts in Hidalgo and particularly the case of small artisans of Tezontepec de Aldana is addressed, it is intended to identify the problematic and to know essential elements in commercialization of handicraft products, that serve as base for the development and consolidation of the craft activity. The methodology used is descriptive and field, local artisans were interviewed, a survey was applied to tourists in municipalities with greater affluence and probabilistic sampling was carried out. The results reveal that artisans participate actively in the most representative exhibitions in the State and yet their products are not always accepted by tourists, 80% of tourists surveyed when buying a craft prioritize the aesthetics of design. It is concluded that according to the data obtained, the need to have a marketing model in the artisan sector is identified, which contributes in the supply of information for the establishment of marketing strategies and competitive advantage.

Keywords

Marketing strategies, Craftsmen, Product, Tourism

Planta gobernadora: Oportunidad de negocio

Governor plant: business opportunity

HERNÁNDEZ-VALENZUELA, Juan Carlos, VILLALOBOS-ROMO, Carlos Dassaevv y MEZA-ARELLANO, Antonio

Instituto Tecnológico Superior de Mulegé

ID 1st Author: *Juan Carlos, Hernández-Valenzuela* / **ORC ID:** 0000-0003-3523-232, **Researcher ID Thomson:** P-4344-2018, **CVU CONACYT ID:** 278735.

ID 1st Coauthor: *Carlos Dassaevv, Villalobos-Romo* / **ORC ID:**0000-0003-4495-9654, **Researcher ID Thomson:** T-8862-2018, **CVU CONACYT ID:** 949284

ID 2nd Coauthor: *Antonio Meza-Arellano* / **ORC ID:** 0000-0002-6553-8392, **Researcher ID Thomson:** P-6194-2018, **CVU CONACYT ID:** 4049918

Abstract

The Gobernadora plant (known as *Larrea tridentata*) is one of the characteristic plants of the zones with desert climates. In Baja California Sur, there is an abundance, however, in the municipality of Mulegé concentrates the largest amount of this species, which has extensive medicinal uses such as: conditions in the urinary tract, fertility problems, acts as an analgesic, among others. Now, there is no product in Santa Rosalia created based on this plant that acts as an analgesic agent to remedy and disappear muscle problems, this research aims to present a real situation, on the tastes and preferences of the consumer, with these data, can make strategic changes to the product to enter the competitive market setting guidelines for effective marketing. Where the method used was deductive and exploitative, 374 surveys and 5 interviews were applied. The results projected that 99.83% of the population has suffered blows and / or injuries, and that more than 50% of the surveyed population would buy the proposed new product as long as it meets certain aesthetic requirements. That is why the efforts should focus on the tastes and preferences of the consumer, transferring their wishes into a tangible product, as well as publicizing the benefits of consuming it.

Keywords

Governor Ointment, MediCalidaX Products, analgesics

Plan de calidad para las áreas de revisado y esmaltado en la empresa Sanitarios Ánfora

Qualityplan for the areas of inspected and enameled in the company Sanitarios Ánfora

GONZÁLEZ-NAVA, Jaime, MARTÍNEZ-SOLÍS, Luis, TÉLLEZ-RODRÍGUEZ, Edgar y TORRES-SALINAS, Lizbeth

Tecnológico Nacional De México, Instituto Tecnológico de Pachuca

ID 1st Author: *Jaime, González-Nava* / **ORC ID:** 0000-0002-2901-0363, **CVU CONACYT ID:** 407001

ID 1st Coauthor: *Luis, Martínez-Solís* / **ORC ID:** 0000-0002-0917-714X, **Researcher ID Thomson:** P-1238-2018, **CVU CONACYT-ID:** 929575

ID 2nd Coauthor: *Edgar, Téllez-Rodríguez* / **ORC ID:** 0000-0002-0289-1922, **Researcher ID Thomson:** P-1296-2018, **arXiv Author ID:** 0000-0002-0289-1922, **CVU CONACYT-ID:** 929962

ID 3rd Coauthor: *Lizbeth, Torres-Salinas* / **ORC ID:** 0000-0002-0774-7794, **Researcher ID Thomson:** P-1317-2018, **arXiv Author ID:** 0000-0002-0774-7794, **CVU CONACYT-ID:** 929987

Abstract

In today's competing business world it is of utmost importance to keep a customer happy and returning. One way to achieve this is based on the quality of the products the company produces by optimizing resources. This work shows the makeup of a quality control and enhancement plan for the areas of final inspecting and enameling in the company Sanitarios Ánfora S. de R.L. of C.V, based on the ISO 10005: 2005 standard. The above mentioned work was compromised of five stages using the DMAIC methodology. A Pareto diagram was the tool of choice which allowed for the proper identification of 3 vital defects; verifying checklists allowed to give thorough following to 20 equal size production lots in order to measure each defective unit; actual operating diagrams based on each checker's procedure of revision and esmalting led us to the implementing of an analytical procedure which allowed us to find the main cause behind each defect; the result of this work was the controlling the sequence through new updated operations manuals properly revised, authorized and disseminated throughout the company reaching the hands of key personnel. A 40% and 45.3% betterment was achieved in the areas of quality control and esmalting respectively by diminishing the number of lost units.

Keywords

Statistical control, Standardizing procedure, DMAIC methodology

La competitividad de las empresas familiares del sector comercio en la Región Centro Sur en México

The competitiveness of family businesses in the commerce sector in the South Central Región of México

AGUILAR-PÉREZ, Esmeralda

Instituto Tecnológico Superior de San Martín Texmelucan.

ID 1st Autor: *Esmeralda, Aguilar-Pérez* / **ORC ID:** 0000-0001-6794-9630, **Researcher ID Thomson:** O-3376-2018, **CVU CONACYT ID:** 625314

Abstract

This article is the result of a study carried out with the objective of characterizing the family businesses of the commerce sector of the South Central region in Mexico. This is a cross-sectional and descriptive study, which was carried out in the months of February and March 2018. The document concludes that it is necessary to design strategic planning models that guide family businesses to achieve competitiveness, since in the analysis carried out, it is identified that 38% have a strategy to compete as a common practice, 49% do not have a strategy to compete, while 13% do not know what a strategy is.

Keywords

Competitiveness, Strategies, Family Businesses

Establecimiento de niveles óptimos de inventario de materia prima

Establishment of optimal levels of raw material inventory

DELGADO-CELIS, Ma. Dolores, CRUZ-RENTERÍA, María Merced y FÉLIX-JÁCQUEZ, Rosa Hilda

Tecnológico Nacional de México/I.T. San Luis Potosí

ID 1st Author: *Ma. Dolores, Delgado-Celis* / **ORC ID:** 0000-0003-0141-497X, **Researcher ID Thomson:** M-1649-2018, **arXiv Author ID:** ma.dolores

ID 1st Coauthor: *María Merced, Cruz-Rentería* / **ORC ID:** 0000-0001-7498-0484, **Researcher ID Thomson:** N-4046-2018, **arXiv Author ID:** MECHE

ID 2nd Coauthor: *Rosa Hilda, Félix-Jácquez* / **ORC ID:** 0000-0001-6961-341X, **Researcher ID Thomson:** E-9292-2018, **arXiv Author ID:** rhfélix

Abstract

The objective of this project was to establish optimal levels of raw material inventory of an automotive manufacturing company, to reduce additional costs of purchasing, storing, handling and preparation of inputs of some items not justified in production orders. These costs are wastes that do not add value to the final product. Considering the demand for finished products, production times, raw material, lead-time and scrap percentages associated with the processes, an analysis was made using the material classification method ABC, based on the Pareto principle, the step that determines the cost-volume relation of the inputs. As a result of this, three critical items were identified in the cost. Subsequently, the economic order quantity model was used to determine the quantity of raw material classified “A” and the number of orders to be placed per month, as a measure of replenishment to ensure the production of a week and a half. It is concluded that, when establishing the optimal level of inventory of raw material, waste is eliminated and the total cost of inventory decreases. The main contribution was a 33% reduction in costs of maintaining inventory.

Keywords

Economic order quantity, Inventory costs, ABC classification

Metodología para la distribución de espacios productivos para PYMES

Methodology for the distribution of productive spaces for SMEs

BLEN, Erick & MONTERO, Elizabeth

Instituto Tecnológico Superior de Martínez de la Torre, Área Académica Ingeniería en Gestión Empresarial

ID 1st Author: *Erick, Blen*

ID 1st Coauthor: *Elizabeth, Montero*

Abstract

The objective of this article is to generate a methodology that improves productive spaces in SMEs, in which the sales area available in stores is analyzed, taking as a case study, the one made for teaching purposes in class taught by one of the co-authors in the local commercial winery called Súper Vale, in which thanks to the work of linking, this research was allowed to be carried out and this methodology designed. Which is currently applied and which is followed.

Keywords

Methodology, Improves productive spaces, SMEs

Disposiciones morales en administradores de la cadena de suministro. Una revisión desde sus trayectorias profesionales

Moral dispositions in supply chain managers. A review from your career paths

GUERRERO-AZPEITIA, Luis Arturo

Universidad Politécnica Metropolitana de Hidalgo

ID 1st Autor: *Luis Arturo, Guerrero-Azpeitia* / **ORC ID:** 0000-0002-8905-7243, **Researcher ID Thomson:** P-3905-2018, **CVU CONACYT ID:** 653267

Abstract

The aim of this article is to understand the moral dispositions of agents that manage different branches of the supply chain; in this sense a sociological perspective is recovered that focuses the professional trajectories of the agents as a comprehensive category that allows to articulate their current administrative practices and their formative and experiential antecedents. On the theoretical construction of the object of study sociological concepts are integrated administrative and those who belong to professional ethics so are recovered authors such as Bourdieu, Drucker and Duarte among others. Methodologically, the documentary analysis technique was used at a first moment of construction and an instrument with open and closed questions was subsequently designed (Likert scale), regarding the treatment of the data, the multiple correspondence analysis was used and the main results detail a strong relationship between the moral dispositions of the agents according to their professional and academic trajectory. The main conclusions that emerge highlight the importance of the held by agents in the administrative field and their corresponding moral provisions, thus providing information that can be valuable in decision making in logistics companies.

Keywords

Professional ethics, Administration, Social trajectories

Implementación de alternativas de solución para disminuir los niveles de rotación de personal en Potzoliza “La casa del Pozole” de Pachuca, Hgo.

Implementation of alternative solutions to reduce staff rotation levels in Potzoliza "La casa del Pozole" in Pachuca, Hgo.

SANTILLÁN-MARTÍNEZ, Zaira Ingrid, GONZÁLEZ-MOSQUEDA, Mayra Lorena, MEDINA-GÓMEZ, Margarita, IBARRA-HUESCA, Ma. Guadalupe

Instituto Tecnológico de Pachuca, Departamento de Ciencias Económico Administrativas

ID 1st Autor: *Zaira Ingrid, Santillán-Martínez* / **ORC ID:** 0000-0003-2828-7974, **Researcher ID Thomson:** O-1996-2018; **CVU CONACYT ID:** 924135

ID 1st Coautor: *Mayra Lorena, González-Mosqueda* / **ORC ID:** 000-002-4153-8099; **Researcher ID Thomson:** 0-1534-2018; **CVU CONACYT ID:** 621849

ID 2nd Coautor: *Margarita, Medina-Gómez* / **ORC ID:** 0000-0002-4239-2415; **Researcher ID Thomson:** O-1501-2018; **CVU CONACYT ID:** 923878

ID 3rd Coautor: *Ma. Guadalupe, Ibarra-Huesca* / **ORC ID:** 0000-0003-3379-425X; **Researcher ID Thomson:** P-5285-2018; **CVU CONACYT ID:** 934965

Abstract

The purpose of this research is to propose, implement and evaluate alternative solutions to the problem related to the high turnover rate of the restaurant company "Potzoliza, the house of Pozole" located in the city of Pachuca, Hidalgo. This research is mixed, descriptive and explanatory, transversal, non-experimental and field. Through the application of personnel surveys, information was obtained to design intervention proposals for this problem, among which the implementation of training programs, incentive systems and salary adjustments stood out. Based on this information, three different solution proposals were formulated to counteract the problem of staff turnover, which could be implemented and evaluated; finding that the rotation of personnel depends on the existence of training programs in the establishment, and on the contrary, it does not depend on the current salary received by workers for the provision of their services. It was concluded that the proposals made contributed to the solution of the initial problem identified in the company object of this investigation.

Keywords

Index of staff turnover, Training program, Incentive system, Salary adjustment

Identificación de Factores de Riesgo desde la perspectiva Ergonómica para la preservación de la Salud Ocupacional

Identification of Risk Factors from the Ergonomic perspective for the preservation of Occupational Health

MUÑOZ-HERNANDEZ, Raquel & RANGEL-LARA, Saúl

Universidad Politécnica del Valle de México, Dirección de Ingeniería Industrial, Av. Mexiquense S/N, Col. Villa Esmeralda, Tultitlán, Estado de México, México.

ID 1st Autor: *Raquel. Muñoz-Hernández* / **ORC ID:** 0000-0002-4461-8027, **Researcher ID Thomson:** I-6661-2018, **arXiv Autor ID:** Raquel4, **CVU CONACYT ID:** 395332

ID 1st Coautor: *Saúl, Rangel-Lara* / **ORC ID:** 0000-0003-1498-340X, **CVU CONACYT ID:** 204243

Abstract

Descriptive study in order to identify ergonomic risk factors in workers of a manufacturing company, and implement a plan of preventive actions to minimize the damage. It began with a situational diagnosis to identify the job position with the highest risk through the Rula Method and the Check List OCRA index; In addition to an interview with each worker about their physical condition and if they presented any discomfort. The result of the RULA method identified the area of dies as the highest risk position, with 76 workers. In the results of the Check List OCRA index, high risk was found for the movements made with the wrist and a medium risk for those carried out with shoulder and elbows. With this information the analysis was carried out. The results showed that 43% will present shoulder damage, 67% in the elbow and 95% in the wrist; with these data, a plan of preventive actions could be justified to avoid medium and long-term effects; avoiding repetitive movements, uncomfortable positions and the application of excessive force by ergonomic instructions according to the activity performed.

Keywords

Risk factors, Work station, Prevention

2 Ciencias Fisicomatemáticas y Ciencias

Propiedades ópticas y fotocatalíticas de los compuestos de TiO₂ / ZnO

Optical and photocatalytic properties of TiO₂ / ZnO composites

TIRADO-GUERRA, Salvador & VALENZUELA-ZAPATA, Miguel

Escuela Superior de Física y Matemáticas del IPN, Edificio 9, U.P. "A.L.M." San Pedro Zacatenco, C.P. 07738, CDMEX, México. Laboratorio de Catálisis y Materiales, ESQIE del IPN, Edificio 8, U.P. "A.L.M.", San Pedro Zacatenco, C.P. 07738, CDMEX, México

ID 1st Author: Salvador, Tirado-Guerra / **ORC ID:** 000-0001-9799-9963, **Researcher ID Thomson:** P-3127-2018, **SNI CONACYT:** 25321

ID 1st Coauthor: Miguel, Valenzuela-Zapata / **ORC ID:** 0000-0002-8430-062X, **SNI-CONACYT:** 9207

Abstract

TiO₂/ZnO composites were synthesized in thin film by sol-gel route and repeated immersion and grown on soda-lime substrates. The composites were studied and characterized with various experimental techniques. TiO₂ layers were grown to five layers thick and on these several layers of ZnO were grown, forming the TiO₂/ZnO composites. The morphology and chemical composition was evaluated by SEM and EDS, phases were determined by XRD and Raman, the topography was recorded by AFM, with UV-Vis spectroscopy the optical properties, and the ionic state of components of the composition were evaluated by XPS. Porous films composed of Ti, Zn and O were identified, the TiO₂/ZnO films showed a wurtzite hexagonal structure with a crystal size of 18.0 nm; untransparent films and an E_g around 3.00 eV resulted. Ion states and binding energies of Ti, Zn, O and C were determined. The catalytic and photoluminescent activity of the TiO₂/ZnO composites were recorded, where MO degradation and emission spectra in the UV and visible region, were obtained. From the synthesized composites and the properties obtained from the study, as catalysts, as well as radiation detectors, were obtained in the UV-Vis range.

Keywords

TiO₂/ZnO, Photodegradation, Photoluminescencet

Caracterización de la actividad catalítica y de la luminiscencia en films de Ag / TiO₂

Characterization of the catalytic activity and of luminescence in Ag/TiO₂ films

TIRADO-GUERRA, Salvador & VALENZUELA-ZAPATA, Miguel

Instituto Politecnico Nacional, Escuela Superior de Física y Matemáticas, Edificio 9, U.P. "A.L.M." San Pedro Zacatenco, C.P. 07738, CDMEX, México. Laboratorio de Catálisis y Materiales, ESIQIE del IPN, Edificio 8, U.P. "A.L.M.", San Pedro Zacatenco, C.P. 07738, CDMEX, México.

ID 1st Author: *Salvador, Tirado-Guerra* / **ORC ID:** 000-0001-9799-9963

ID 1st Coauthor: *Miguel, Valenzuela-Zapata* / **ORC ID:** 0000-0002-8430-062X

Abstract

Ag/TiO₂ thin films are synthesized on soda-calcium glass substrates, using the sol-gel chemical route and repeated immersion. Series of TiO₂ films at a certain thickness, were modified superficially with several layers of Ag nanoparticles and thus obtaining the Ag/TiO₂ catalysts. The physical-chemical properties of the films are studied. The Ag/TiO₂ films were characterized by XRD and Raman spectroscopy, SEM morphology, chemical composition by EDS, the topography was recorded with AFM, its optical properties with UV-Vis and the ionic states of the surface components by XPS. The film thickness was 173.0 nm, a crystallite size of the order of 20 nm, a transmittance of 80%, a refractive index between 2.046-1.599, and E_g between 3.67-3.52 eV, depending on the surface modification with Ag. The catalytic activity was recorded evaluating the degradation of aqueous solution, depending on the concentration and time of irradiation with UV-Vis. The photoluminescence of the films was recorded when excited with photons of 325 nm. From the results of the study of Ag/TiO₂ films, they have the potential to be applied as catalysts in the treatment of contaminated water, and in radiation dosimetry.

Keywords

Ag/TiO₂, Photocatalysis, Photoluminescence

Degradación Fotocatalítica de Ethinilestradiol en solución acuosa

Photocatalytic Degradation of 17 α -Ethinylestradiol in Aqueous Solution

NOGUERA-ORTIZ, Jonathan Eliezer, LUNA-SANCHEZ, Raúl Alejandro, SOLIS-MALDONADO, Carolina and ZERMEÑO-RESENDIZ, Brenda Berenice

Universidad Veracruzana, Facultad de Ciencias Biológicas y Agropecuarias. Carretera Tuxpan-Tampico km 7.5 Col. Universitaria, C.P. 92850, Tuxpan, Veracruz, México

ID 1st Author: *Jonathan Eliezer, Noguera-Ortiz* / **ORC ID:** 0000-0002-1476-7363, **Researcher ID Thomson:** P-6726-2018, **CVU CONACYT ID:** 621085

ID 1st Coauthor: *Raúl Alejandro, Luna-Sanchez* / **ORC ID:** 0000-0003-2932-882X, **Researcher ID Thomson:** O-8957-2018, **CVU CONACYT ID:** 265552

ID 2nd Coauthor: *Carolina, Solis-Maldonado* / **ORC ID:** 0000-0002-9419-2001, **CVU CONACYT ID:** 298580

ID 3rd Coauthor: *Brenda Berenice, Zermeño-Resendiz* / **ORC ID:** 0000-0003-0958-6450, **Researcher ID Thomson:** P-66222018, **CVU CONACYT ID:** 169262

Abstract

In the present investigation work, the degradation of 17 α -ethinylestradiol (EE2) in aqueous solution was studied. The main objective of this work is the degradation of EE2 through the process of heterogeneous photocatalysis using TiO₂ as a catalyst. The objective was the determination of the reaction parameters of the drug such as the photochemical effect, the adsorption rate of the catalyst and the initial concentration of the contaminant. The degradation was evaluated by the appropriate techniques of UV-vis and TOC spectroscopy. Like other works, the mineralization of this compound is reported, however, the % of EE2 mineralization can be determined in a solution that uses a photocatalytic process.

Keywords

Degradation, Photocatalysis, 17 α etinilestradiol

Interfaz basada en geometría computacional para caracterizar distribución de puntos espaciales en herramientas de uso industrial

Interface based on computational geometry to characterize the spatial structure of point patterns for industry tools

BAUTISTA-ELIVAR, Nazario, AVILES-COYOLI, Katia and MARTÍNEZ-SOLÍS, Luis

Tecnológico Nacional de México/Instituto Tecnológico de Pachuca

ID 1st Autor: *Nazario, Bautista-Eivar* / **ORC ID:** 0000-0002-9556-2748, **SNI-CONACYT:** 34699

ID 1st Coautor: *Katia, Aviles-Coyoli* / **ORC ID:** 0000-0003-1619-4359, **Researcher ID Thomson:** P-3428-2018, **CVU CONACYT ID:** 568518

ID 2nd Coautor: *Luis, Martínez-Solís* / **ORC ID:** 0000-0002-0917-714X, **Researcher ID Thomson:** P-1238-2018, **PubMed Autor ID:** N58, **CVU CONACYT ID:** 929575

Abstract

Given a spatial point pattern, we propose a graphical interface is developed to analyze the spatial and angular characteristics based on Voronoi polygons and Delanuay triangles to extract information of the spatial point distribution of industrial tools, using Voronoi polygon and Delanuay triangulation (IVDI). This interface generate TXT files frequencies on Voronoi polygons, it generate graph which connects neighbors points in each Voronoi polygon selected by the user (Ulam tree modified) and it calculate the distances to each neighbor point and the internal angles. The interface obtain measures internal angles of Delanuay triangles, obtain measures neighbors nearest distance throughout the tessellation, obtain measures distance between selected points by the user, calculates the average of mean distances between points, evaluate polygonality and polygonality index, average angular differences, variation index of angle differences, mean-square deviation of angles, and circle radius circumscribing each Delanuay triangle.

Keywords

Voronoi polygon, Delanuay trinangulation, Industries tools

Decoloración de un azocompuesto en medio acuoso mediante el uso de colmenas de convertidor catalítico en desuso

Decoloration of an azocompound in medium aqueous through the use of beehives of disused catalytic converter

CONTRERAS-BERMÚDEZ, Raúl, GONZALEZ-ARELLANO, Cecilia, HERNÁNDEZ-ROMERO, Israel y RÍOS-VELASCO, Lizeth

Universidad Veracruzana, Facultad de Ciencias Químicas. Sección Poza Rica Ver. 93230, México

ID 1^{er} Autor: Raúl, Contreras-Bermúdez / **ORC ID:** 0000-0002-1498-5854, **Researcher ID Thomson:** P-5805-2018, **CVU CONACYT ID:** 322549

ID 1^{er} Coautor: Cecilia, González-Arellano / **ORC ID:** 0000-0001-7563-1438, **arXiv ID:** 2369529, **Researcher ID Thomson:** P-5932-2018

ID 2^{do} Coautor: Israel, Hernández-Romero / **ORC ID:** 0000-0002-4457-575X, **Researcher ID Thomson:** O-7173-2018, **CVU CONACYT ID:** 64173

ID 3^{er} Coautor: Lizeth, Ríos-Velasco / **ORC ID:** 0000-0002-6141-0404, **Researcher ID Thomson:** P-6783-2018, **arXiv ID:** 2369517

Abstract

In this work we report the photocatalytic discoloration of the azo-blue denim azo compound (300 ppm) by the use of disused catalytic converter (0.7 to 1.1 g / L) from the mechanical workshops, to follow the The spectrophotometric method is used, using the UV-VIS spectrophotometer of the brand JENWAY 7305 at a wavelength of 570 nm. The reaction system is a batch reactor with a volume of 0.5 liters, with constant agitation. The catalyst was activated by the light of a trojan UV lamp (24 $\mu\text{w} / \text{cm}^2$). The best results were obtained for 0.9 g / L with 85% degradation in a reaction time of 5 hours. The interest in this discoloration process is to reduce contamination by this material and use it to reduce environmental contamination in colored solutions by dyes.

Keywords

Discoloration, Azocompound, Catalytic converter

Síntesis y caracterización de catalizadores utilizando la biomasa de lirio acuático (*Eichhorniacrassipes*)

Synthesis and characterization of catalysts using aquatic lily biomass (*Eichhorniacrassipes*)

HERNANDEZ-ROMERO, Israel, LUNA-SANCHEZ, Raúl, MARQUEZ-VERA, Carlos y SANTIAGO-PEREZ, Jaime

Universidad Veracruzana, Facultad de Ciencias Químicas, Zona Poza Rica – Tuxpán, Ver. México

ID 1^{er} Autor: *Israel, Hernández-Romero* / **ORC ID:** 0000-0002-4457-575, **Open ID:** O-7173-2018, **CVU CONACYT ID:** 64173

ID 1^{er} Coautor: *Raúl, Luna-Sánchez* / **ORC ID:** 0000-0003-2932-882, **Open ID:** O-8957-2018, **CVU CONACYT ID:** 265552

ID 2^{do} Coautor: *Carlos, Marquez-Vera* / **ORC ID:** 0000-0002-2192-665, **Open ID:** O-8721-2018, **CVU CONACYT ID:** 216617

ID 3^{er} Coautor: *Jaime, Santiago-Perez* / **ORC ID:** 0000-0003-0022-3434, **Open ID:** P-3892-2018, **CVU CONACYT ID:** 934031

Abstract

This paper presents the synthesis and characterization of the aquatic lily biomass (*Eichhorniacrassipes*), which is a free floating plant, which occupies an outstanding place in fresh water. So, finding a new alternative raw material that provides the aquatic lily biomass for use as a catalyst, would be useful for water treatment plants, since it has a great potential in the removal of heavy metals, thanks to its extensive Leaf and root system, has excellent filtration power and ability to absorb impurities and contaminants. In addition, the ability to trap and fix the indistinct elements of water. To carry out its characterization, it was washed, dry, once the water lily was dry, it was crushed in a mortar and then the mixture was made with sulfuric acid (H₂SO₄) in a 0.80% solution and left to rest for 30 minutes. Once the modified catalyst was obtained with H₂SO₄, the characterization of the water lily was performed through Infrared Spectroscopy (FTIR), Scanning Electron Microscopy (SEM), X-ray Diffraction (XRD).

Keywords

Aquatic lily, Catalyst, Absorption

Rendimiento académico de estudiantes de Ingeniería en el área de matemáticas, Caso: Sistemas Computacionales

Academic performance of engineering students in the area of mathematics, Case: Computer Systems

GÓMEZ-MERCADO, Abdiel, LEÓN-CASTELAZO, Yolanda, LÓPEZ-JUÁREZ, Nancy, ISLASGONZÁLEZ, Celeste y ORTIZ-ORTIZ, Nayeli

Tecnológico Nacional de México/Instituto Tecnológico de Pachuca. División de Estudios de Posgrado e Investigación/Depto. de Ingeniería Química y Bioquímica. Carr. México-Pachuca Km 87.5 Col. Venta Prieta C.P. 42080 Pachuca, Hgo.

ID 1^{er} Autor: *Abdiel, Gómez-Mercado* / **ORC ID:** 0000-0002-3409-6851, **Researcher ID Thomson:** P-7684-2018; **PubMed ID:** abd131_gm

ID 1^{er} Coautor: *Yolanda, León-Castelazo* / **ORC ID:** 0000-0001-5139-8803, **Researcher ID Thomson:** P-6775-2018, **arXiv ID:** yola-37

ID 2^{do} Coautor: *Nancy, López-Juárez* / **ORC ID:** 0000-0002-8288-0923, **Researcher ID Thomson:** P-6242-2018; **arXiv ID:** Nancy_LJ

ID 3^{er} Coautor: *Celeste, Islas-González* / **ORC ID:** 0000-0002-1864-0474, **Researcher ID Thomson:** P-7680-2018; **arXiv ID:** ce_islas

ID 4^{to} Coautor: *Nayeli, Ortiz-Ortiz* / **ORC ID:** 0000-0002-3447-1025, **Researcher ID Thomson:** P-6753-2018, **arXiv ID:** naye_

Abstract

The purpose of the presented research was to develop a predictive model of the performance of engineering students in Computational Systems of the Technological Institute of Pachuca in the area of mathematics, based on selection exam results. A quantitative investigation was carried out, with a correlational and descriptive approach. We studied 420 students of the aforementioned career, which constitute the totality of seven generational cohorts, from August-December 2012 to August-December 2016. The results obtained in the exam were analyzed, finding a direct correspondence between the average and the points in the math areas of the exam. Subsequently, three blocks were established according to the ICNE obtained in the exam: from 700 to 999, from 1000 to 1149 and from 1150 to 1300 points. The students were placed in these blocks and the results of the eight subjects of the mathematics area of the race were compared, considering the opportunity of accreditation or non-accreditation (first year, repetition, special). With the results, a correspondence model was established that allows predicting, with a high degree of reliability, the student's behavior in the area of mathematics since his admission, as well as proposing preventive actions for a better academic performance.

Keywords

Predictive model, Mathematics, Academic performance

Extracción y enriquecimiento de relaciones semánticas en una ontología de dominio restringido

Extraction and enrichment of semantic relationships in a restricted domain ontology

TOVAR-VIDAL, Mireya & SANTOS-RODRÍGUEZ, Emmanuel

Benemérita Universidad Autónoma de Puebla. Facultad de Ciencias de la Computación

ID 1^{er} Autor: *Mireya, Tovar-Vidal* / **ORC ID:** 0000-0002-9086-7446, **Researcher ID Thomson:** P-6275-2018, **CVU CONACYT ID:** 98665

ID 1^{er} Coautor: *Emmanuel, Santos-Rodríguez* / **ORC ID:** 0000-0002-7030-462X, **Researcher ID Thomson:** P-6231-2018

Abstract

This research presents a proposal for the extraction of semantic relationships of type synonymy, hyperonymy and meronymy through the use of a linguistic ontology in a domain of artificial intelligence, which has been generated by OWL and Protégé as well as the construction of bigrams to create terms that are candidates for semantic concepts and relations, with the purpose of enriching the knowledge stored in the restricted domain ontology of Artificial Intelligence. The proposed algorithms are implemented in the Python programming language by using the Natural Language Toolkit (NLTK) library set. Based on the experimental results obtained so far, the inclusion of 31 semantic relations of the holonymy - meronymy type is proposed to enrich the domain ontology. On the other hand, the extension of ontologies is highly recommended because they not only allow the storage of information through the formalization of knowledge but also allow it to be searched and retrieved.

Keywords

Extraction of information, Domain ontology, Semantic relations

Propuesta técnica-económica para el establecimiento de una planta de licor de café en la región del totonacapan

Technical-economic proposal for the establishment of a coffee liqueur plant in the Totonacapan region

HERNANDEZ-ROMERO, Israel, HERNANDEZ-VAZQUEZ, Zaira and SANDOVAL-REYES, Francisca

Universidad Veracruzana, Facultad de Ciencias Químicas, Zona Poza Rica – Tuxpán, Ver. México.

ID 1st Author: *Israel, Hernandez-Romero* / **ORC ID:** 0000-0002-4457-575X, **Researcher ID Thomson:** O-7173-2018, **CVU CONACYT ID:** 64173

ID 1st Coauthor: *Zaira, Hernandez-Vazquez* / **ORC ID:** 0000-0002-2688-2588X, **arXiv ID:** VVNHUC-7ZJUWT, **Open ID:** P-1809-2018, **CVU CONACYT ID:** 930600

ID 2nd Coauthor: *Francisca, Sandoval-Reyes* / **ORC ID:** 0000-0002-9467-8714, **Open ID:** P-5726-2018, **CVU CONACYT ID:** 600377

Abstract

This paper presents the design of a coffee liqueur pilot plant that will be located in the city of Papantla Veracruz, in an area of 2500 m², the land has all the services and facilities to make the collection with a cost of approximate investment of \$ 30,000.00 Considering that the mechanical method will be used and that it may have the option of being scaled at the industrial level, the design of the fermenter, installation costs, labor, I am also carrying out a market study, for the sale of the product. When conducting a market study, we seek to obtain current information on the needs existing in the city of Papantla and its surroundings, in relation to liquor consumption, tastes, preferences, parameters that allow to delimit the demand and supply, as the unsatisfied demand of the sector. In the current world, the market and its structure are predominant factors for the development of any project, the market study, as it consists of determining the quantity of goods and services that companies are able to produce to meet the needs of the market. The population at a price level set by the competition.

Keywords

Liqueur, Pilot plant, Schnapps, Tequila

El estrés laboral y síndrome de burnout en los trabajadores en la industria maquiladora en Los Mochis, Sinaloa, México

The labor stress and burnout syndrome in workers in the maquila industry in Los Mochis, Sinaloa, Mexico

CASTRO-BORUNDA, Zenia Isabel, OLAYO-VALLES, Jorge Alberto, NARANJO-CANTABRANA, María Guadalupe y VIZCARRA-CASTRO, Christian Alejandro

Tecnológico Nacional de México/ I.T. Los Mochis, Tecnológico Nacional de México/Instituto Tecnológico de Tlahuac, Tecnológico Nacional de México/I.T. Los Mochis, Tecnológico Nacional de México/I.T. Los Mochis

ID 1st Author: *Zenia Isabel, Castro-Borunda* / **ORC ID:** 0000-0001-7976-3948, **Researcher ID Thomson:** P-6195-2018, **arXiv Author ID:** zeniacastroborunda, **CVU CONACYT ID:** 920484

ID 1st Coauthor: *Jorge Alberto, Olayo-Valles* / **ORC ID:** 0000-0003-3760-3617, **Researcher ID Thomson:** P-6195-2018, **CVU CONACYT ID:** 936080

ID 2nd Coauthor: *María Guadalupe, Naranjo-Cantabrana* / **ORC ID:** 0000-0002-5187-9217, **Researcher ID Thomson:** P6585-2018, **arXiv Author ID:** MariaNaranjo

ID 3rd Coauthor: *Christian Alejandro, Vizcarra-Castro* / **ORC ID** 0000-0001-6987-1160, **Researcher ID Thomson:** P-66572018, **arXiv Author ID:** christianvizcarra

Abstract

The Burnout Syndrome (to be consumed or exhausted) is characterized by a progressive physical and mental exhaustion, an absolute lack of motivation for the tasks performed. The objective of this article is to analyze the stress of the workers who suffer the symptoms associated with the burnout syndrome, who are in employment in the maquila industry in the City of Los Mochis, Sinaloa, Mexico. The methodology used started from a descriptive investigation, carrying out the inductive and deductive method, with the survey technique and the Likert type instrument based on the Psychosomatic Problems Questionnaire (CPP) of Hock (1988) with 12 questions as contribution in relation to the Burnout syndrome with the Questionnaire (CPP), the following results were obtained: 66.15% of the respondents have the average stress level, 18.46% have the high stress level, which is a nonrepresentative percentage, as well as 12.31% with very high stress level and finally 3.08% of low stress level.

Keywords

Fatigue, Reduced productivity, Quality of life

3 Ingeniería y Tecnología

Estudio para impulsar la comercialización de los productores a través de una empresa de consultoría

Study to promote the commercialization of producers through a consulting company

MEZA-ROSAS, Iliana Janeth, ROJAS-AGUILAR, Yeritza Guadalupe, GOMEZ-VALENZUELA, Karla Felixia and MURILLO-AGUIRRE, Aide Evelina

Instituto Tecnológico Superior de Mulegé

ID 1st Author: *Iliana Janeth Meza-Rosas* / **ORCID ID:** 0000 0002-4173-2422, **Researcher ID Thomson:** P-5910-2018, **CVU CONACYT ID:** 931015

ID 1st Coauthor: *Yeritza Guadalupe Rojas-Aguilar* / **ORCID ID:** 0000-0002-9746-6688, **Researcher ID Thomson:** T-7116-2018, **CVU CONACYT ID:** 948877

ID 2nd Coauthor: *Karla Felixia Gomez-Valenzuela* / **ORCID ID:**0000-0002-5029-6984, **Researcher ID Thomson:** T-7801-2018, **CVU CONACYT ID:** 948957

ID 3rd Coauthor: *Aide Evelina Murillo-Aguirre* / **ORCID ID:**0000-0001-9550-9173, **Researcher ID Thomson:** T-7108-2018, **CVU CONACYT ID:** 948884

Abstract

The present article shows results obtained from the market research carried out on the inhabitants of San José de Magdalena and Santa Águeda, Mulege Municipality, Baja California Sur, to determine the characteristics and needs, as well as the acceptance of the regional producers before the idea To create a consultancy to provide marketing and marketing advice allowing people who want to launch their products to the market and who do not have the knowledge and tools to do so, this will provide many opportunities for all of them and their economy, where the method to obtain The information was descriptive and exploratory, in which interviews and field observations were made with producers in the region, as well as information (INEGI 2014) to determine and apply the population sample, establishing a total of 129 inhabitants for San Jose de Magdalena and 61 Inhabitants for Santa Agueda, which were used to obtain The results were positive for the business idea as well as the possible advantages that would be obtained by the producers of it, having as proposal of the creation of a consulting company of Marketing and Commerce to train and advise to regional producers, seeking to promote its Economy through its products.

Keywords

Producers, Marketing, Regional products

Investigación de mercado sobre el nivel de aceptación del ungüento ALOEGAN

Market research on the level of acceptance of the ALOEGAN ointment

MEZA-ARELLANO, Antonio, GOMEZ-MORENO, Maria Lucia, GONZALEZ-VERDUGO, Carlos Edel and VERDUGO-ANDRADE, Ronaldo Aldahir

Instituto Tecnológico Superior de Mulegé

ID 1st Author: *Antonio, Meza-Arellano* / **ORC ID:** 0000-0002-6553-8392, **Researcher ID Thomson:** P-6194-2018, **CVU CONACYT ID:** 404918

ID 1st Coauthor: *Maria Lucia, Gomez-Moreno* / **ORC ID:** 0000-0002-4491-5638, **Researcher ID Thomson:** T-7105-2018, **CVU CONACYT ID:** 948890

ID 2nd Coauthor: *Carlos Edel, Gonzalez-Verdugo* / **ORC ID:** 0000-0002-6254-7488, **Researcher ID Thomson:** T-7044-2018, **CVU CONACYT ID:** 949164

ID 3rd Coauthor: *Ronaldo Aldahir, Verdugo-Andrade* / **ORC ID:** 0000-0003-4267-7493, **Researcher ID Thomson:** T-7025-2018, **CVU CONACYT ID:** 948835

Abstract

The aloe is a plant in Arabia and northwest Africa, with excellent properties for the skin, which is where it takes advantage of its emollient, anti-inflammatory, moisturizing and antibacterial qualities. Aloe Vera-based products help heal wounds, skin burns and insect bites among other qualities it possesses. The objectives developed in this research were the valuation of the product demand ALOEGAN made in a handmade way based on aloe vera and vegetable oils. The method of collection of information was deductive and exploratory, where they conducted surveys and direct observation in the population of Santa Rosalía, Baja California Sur, corresponded to a representative sample of 343 people for the survey and 90 people for direct observation, between men and women. The ointment had an acceptance of 77.27% between both sexes. The people who consume this type of items most are women between 26 and 35 years and the price is in the range of 21 to 40 pesos, besides that they can find it in the supermarket because that is where they are going to do the purchases of the week.

Keywords

Aloe vera, ALOEGAN, Wounds, Skin, Ointment

Modelo EFMQ de Clusterización de PYMES en el Oriente del Estado de México

EFMQ model of clusterization of SMES in the middle east of the State of Mexico

DORANTES-BENAVIDEZ, Humberto, ACOSTA-MENDIZABAL, Marco Antonio, NAJERA - SEGOVIA, José Luis and DORANTES- BENAVIDEZ, Felipe de Jesús

Tecnológico de Estudios Superiores del Oriente del Estado de México

ID 1st Author: *Humberto, Dorantes-Benavidez*

ID 1st Coauthor: *Marco Antonio, Acosta-Mendizabal*

ID 2nd Coauthor: *José Luis, Najera -Segovia*

ID 3rd Coauthor: *Felipe De Jesús, Dorantes- Benavidez*

Abstract

Small and medium enterprises are a sector of growing importance in the economic development of the State of the State of Mexico, which can be modified very quickly. Thus, every day there is an increasing interest to understand more and better than the way in which the economies are energized, however, although there are the conditions of infrastructure and technology that allow for transactions of distribution and supply of goods in a Effective, There are several factors that limit, which SMEs use as an instrument for continuous improvement and the productivity of them, an internal level. SMEs are responsible for the efficient planning, administration and control systems, as well as the own technologies for the management and development of their productive activities, due to the lack of a geographical concentration of companies and associated institutions in a particular field, which It would help to be linked by common characteristics and continuous improvement. This project has the participation of companies in the realization of activities related to the value of housing and the value of housing. an objective, rigorous and structured analysis of its operation, resulting in an optimal renewal in its management and continuous improvement.

Objectives, methodology

Design a new business cluster system using multivariate statistics in combination with an EFQM model, as a comprehensive quality tool, that allows SMEs in the State of Mexico to maximize competition by taking advantage of opportunities in the networks and value chains of the products resulting in an optimal renewal in its management and continuous improvement.

Contribution

The following project will consolidate and potentiate the competent business management in its different typologies; the importance of creation and innovation factors in the competitive development of an SME compared to the traditional archetypes of the business world; High performance teams in small and medium organizations; the role of vision in the functioning of SMEs; making strategic decisions, both from the point of view of a potential entrepreneur and that of a manager whose organization is in the process of development; the design and implementation of quality strategies with an EFMQ model; the need to implement business contact networks as a substantial element of organizational development and the constituent base of the company's social capital; empower human talent; the marketing tools for the benefit of our region and the inclusion of university students in said project, seeking the strengthening and growth of Mexico.in vector control systems and direct control of DC motors, this relatively new technology is used to efficiently replace equipment that no longer works optimally according to technological advances Which is essential to an emerging country like ours. The data necessary to train the artificial neural networks will be obtained firstly from the results of simulations of the system formed by the motor and its control and secondly from experimental results. To this end, a DC motor model is implemented that will be tested with different nominal values and controlled with different control systems by training it with neural networks.

Keywords

SMEs, EFQM, Cluster, Quality, Competitiveness

Fomento al Etnoturismo en la Meseta Purepecha del Estado de Michoacán

Promoting Etnoturismo at Michoacán's Purepecha's plateau

VÁZQUZ-DÍAZ, Thanya Mirelly, GUILLEN-CASILLAS, Luz Elvira and STOCKER, Ana Paula

Instituto Tecnológico Superior de Los Reyes.

ID 1st Author: *Thanya Mirelly, Vázquez Díaz* / **ORC ID:** 0000-0001-6603-3081

ID 1st Coauthor: *Luz Elvira, Guillen Casillas* / **ORC ID:** 0000-0003-1797-3231

ID 2nd Coauthor: *Ana Paula, Stocker* / **ORC ID:** 0000-0002-4198-9762

Abstract

The main objective from the present project is to know the purepecha's plateau towns acceptance to become an etnoturistic region, by different commercial activities, such as their likes and needs to develop a sustainable economic growth. For the present, we realized market researches that facilitated us information, which confirmed by a statistical sample the interest of the habitants from close towns and cities to visit the ethnic towns in the purepecha's plateau. We look to contribute to said communities to develop job sources through etnoturism, improving the region's economy. Due to the lack of employ, the habitants from the purepecha's plateau use to go out their communities looking for job opportunities. With all this, we look forward to spread along the region about these town's manners, traditions, infrastructure, gastronomy and natural resources, letting the town's habitants that commercializing their cultural wealth, they could improve up to 30% their life quality.

Keywords

Etnic, Etnoturismo, Economy

Nuevo modelo de inyección multipuerto en una chumacera corta. Campos de presión

New model of multiport injection in a short bearing. Pressure fields

VALDEZ-SIERRA, Jonnatan, RAMÍREZ-VARGAS, Ignacio, PALACIOS-PINEDA, Luis Manuel y VERA-CARDENAS, Edgar Ernesto

Instituto Tecnológico de Pachuca, División de Estudios de Posgrado e Investigación, Carr. México-Pachuca Km. 87.5 Col. Venta Prieta, CP 42080, Pachuca, Hgo. México.

ID 1^{er} Autor: *Jonnatan, Valdez-Sierra* / **ORC ID:** 0000-0001-5206-0863, **Researcher ID Thomson:** P-5354-2018, **Mendeley ID:** www.mendeley.com/profiles/jonnatan-valdez-sierra/

ID 1^{er} Coautor: *Ignacio, Ramírez-Vargas* / **ORC ID:** 0003-1887-8949

ID 2^{do} Coautor: *Luis Manuel, Palacios-Pineda* / **ORC ID:** 0000-0001-5297-2950

ID 3^{er} Coautor: *Edgar Ernesto, Vera-Cardenas* / **ORC ID:** 2-9658-00089

Abstract

In the present article the theory of pressurized presumptions was taken up, which is focused on the dynamic analysis of the speed of a rotor reference point, by the analytical approximation of Occirk and the model of the Dirac Delta function for short bearings. External pressurization is an artificial way to change the properties of rigidity and damping, said properties cause the behavior of a rotating system to be modified. The innovation of this work focused on the theory of pressurized bearings with multi-recesses, which allow to inject a lubricating oil in ports whose axial and angular position is arbitrary. The main objective will be to determine the pressure field that is formed inside a short hydrodynamic bearing, when it is injected with lubricating oil. Injection ports are proposed in positions 45°, 135°, 225° and 315°. The pressure field (obtained from software Wolfram Mathematica 11) formed by injecting lubricating oil in the aforementioned positions was determined. It was determined that the injection port is the ideal one to use since it can attenuate the levels of vibration that occur in a pressurized hydrodynamic bearing (C.H.P.).

Keywords

Hydrodynamic bearing, External pressurization, Reynolds equation

Estudio del desgaste por contacto bola-plano en la aleación de aluminio 6061

Wear study of the ball on flat contact in 6061 aluminum alloy

TORRES-SUAREZ, Francisco Emmanuel, MENDOZA-MENDOZA, Jesús Cornelio, VALDEZ-SIERRA, Jonnatan y VERA-CÁRDENAS, Edgar Ernesto

Tecnológico Nacional de México/Instituto Tecnológico de Pachuca

ID 1^{er} Autor: *Francisco Emmanuel, Torres-Suarez* / **ORC ID:** 0000-0003-4779-5085, **Researcher ID Thomson:** P-4870-2018, **Mendeley:** francisco-emmanuel-torres-suarez

ID 2^{do} Coautor: *Jesús Cornelio, Mendoza-Mendoza* / **ORC ID:** 0000-0002-9506-4212, **Researcher ID Thomson:** P-4814-2018, **Mendeley:** jesus-cornelio-mendoza-mendoza

ID 3^{do} Coautor: *Jonnatan, Valdez-Sierra* / **ORC ID:** 0000-0001-5206-0863, **Researcher ID Thomson:** P-5354-2018, **Mendeley:** jonnatan-valdez-sierra

ID 3^{er} Coautor: *Edgar Ernesto, Vera-Cárdenas* / **ORC ID:** 0000-0002-9658-0008

Abstract

In this work the sliding wear of 6061 aluminum alloy was studied using experimental techniques, for possible applications in mechanical components of automotive systems. The experimental tests were carried out using a reciprocating machine with a ball-on-plane configuration. Tests were carried out in dry and lubricated conditions using a SAE 40 oil. The duration of the tests was 9000 cycles at room temperature (20-23 ° C and 45% -50% relative humidity), at a frequency of 5 Hz, Slip amplitude of 3 mm and normal load of 1.96 N (0.75 GPa of contact pressure). Before the wear tests, the roughness and microhardness of the aluminum were determined. The wear presented by optical microscopy and SEM was characterized. The coefficients of friction were obtained both in dry and lubricated conditions, observing a clear difference between the two. Finally, the wear volumes were calculated by means of profilometry, obtaining an average of the depth, length and width of the wear scar. The results show a clear reduction of the coefficient of friction and wear rates in lubricated conditions, the wear mechanisms observed mainly were plastic deformation and abrasion of three bodies.

Keywords

Sliding wear, Aluminum, Lubrication

Metodología de diseño de una línea de producción para un sistema riego y captación de agua

Methodology of design of a production line for an irrigation and water harvesting system

ARELLANO-BRIONES, Olimpia, FERNÁNDEZ-GARCÍA, Luis, RODRÍGUEZ-LARKINS, Edilberto y PUGA-ROMERO, Janeth

Tecnológico Nacional de México/ Instituto Tecnológico. de Altamira, Universidad Tecnológica de Altamira

ID 1^{er} Autor: *Olimpia, Arellano-Briones*

ID 1^{er} Coautor: *Luis, Fernández-García* / ORC ID: 0000-0002-6174-765

ID 2^{do} Coautor: *Edilberto, Rodríguez-Larkins*

ID 3^{er} Coautor: *Janet, Puga-Romero*

Abstract

The National Technology of Mexico, at the campus, of Altamira Technological Institute of (ITA) is located in a region of hot-humid climate where most of the year there are high temperatures that cause the need for a daily water supply to the vegetation. The ITA in the educative offer has Engineering in Agronomy and Bachelor's degrees in Biology that require the use of nurseries in the green houses for professional practice. For this purpose, the construction of a catchment and irrigation system that allows using water present in the mist and fog is proposed. This design will be elaborated from the plastic mesh or perforated plates of fog intercepted being distributed the collected water under recyclable material. This study shows the methodology of development of the production line of said system. Showing from the collection of raw material, location of the installation and description and characteristics of the processes. The fundamental idea is to make development processes in a sustainable way. In addition, as collateral effects, the measured and responsible use of natural resources is promoted.

Keywords

Irrigation system, Methodology, Production

Dispositivo electrónico y la app inventor como ayuda a la discapacidad visual

Electronic device and the inventor app as a help to visual disability

VIVALDO-VICUÑA, Araceli, SANCHEZ-TIZAPANTZI, Pedro y CALDERON-GARCIA, Gustavo

Instituto Tecnológico Superior de San Martín Texmelucan (ITSSMT) C.P. 74120 Puebla, Pue.

ID 1^{er} Autor: *Araceli, Vivaldo-Vicuña* / **ORC ID:** 0000-0003-1187-7660, **Researcher ID Thomson:** Q-1978-2018, **CVU CONACYT ID:** 949473

ID 1^{er} Coautor: *Pedro, Sanchez-Tizapantzi* / **ORC ID:** 0000-0001-5861-4724, **Researcher ID Thomson:** P-6723-2018

ID 2^{do} Coautor: *Gustavo, Calderon-García* / **ORC ID:** 0000-0002-0670-3108

Abstract

This work presents the connection to send information via bluetooth using HC05 and using a block editor of the app inventor platform to send information captured by a sonic sensor HC-SR04 that acts to detect obstacles at different distances, and said information is sent to the mobile device with which the connection is made. An application based on ANDROID was designed whose versions are functional as of version 2.0, within this application it includes the own aids for the people to whom it is directed as the use of sounds so that the user can connect without problems to the sensor Sonic using bluetooth. This HC-SR04 sensor is used together with a microcontroller 16F877 and 18F2550 that was programmed in C ++ language and three different measurements are recorded, 1 meter, 50 cm and 29 cm. This project will help improve the quality of life of people with visual problems

Keywords

App Inventor, Sonic Sensor, Microcontrollers

EasyProg

MENDOZA-AUSTRIA, Luis, CABALLERO-TOLENTINO, Juan, MAGGI-NATALE, Carlos, HERNANDEZ-RAMIREZ, Anselmo y ARRIETA-ZUÑIGA, Alejandro

Tecnologico Nacional, Instituto Tecnologico de Pachuca. SEP

ID 1^{er} Autor: *Luis, Mendoza-Austria* / **ORC ID:** 0000-0002-1572-2159, **Researcher ID Thomson:** P4842-2018, **NCBI:** mendozaaustria

ID 1^{er} Coautor: *Juan, Caballero-Tolentino* / **ORC ID:** 0000-0003-2147-3141, **Researcher ID Thomson:** P-6773-2018, **NCBI:** jcaballero

ID 2^{do} Coautor: *Carlos, Maggi-Natale* / **ORC ID:** 0000-0002-3842-409, **Researcher ID Thomson:** P-4747-2018, **arXiv ID:** zgatomoteado

ID 3^{er} Coautor: *Anselmo, Hernandez-Ramirez* / **ORC ID:** 0000-0001-9511-7065, **Researcher ID Thomson:** P-4842-2018, **arXiv ID:** ahr53

ID 4^{to} Coautor: *Alejandro, Arrieta-Zuñiga* / **ORC ID:** 0000-0001-9698-788X, **Researcher ID Thomson:** M-9232-2018, **arXiv ID:** jaaz1967

Abstract

The present work includes the development and implementation of a platform that provides an easy to learn and use programming language with which children and young people can introduce themselves to the world of programming. The language consists in a structure by blocks, which represents an easy to learn option to generate a solid base of knowledge. In a not so far future, the domain of a computer language programming will be a necessary knowledge for everyone, this platform is designed for programming using different kinds of blocks, in which, each one will represent a different instruction; programmers will combine the blocks and add the variables to develop their programs, letting that the users become familiar with the most common instructions as in the other programming languages. The tests realized with the desk application, result to be enjoyable for the kids that used it, they showed great enthusiasm for the application because it wasn't complicated to use, also, it developed an interest for programming to them.

Keywords

Programming, Blocks, Languag

Sistema web para la identificación de oportunidades de empleo mediante el algoritmo de emparejamiento

Web System for the identification of opportunities for employment through matching algorithm

BELLO-LÓPEZ, Pedro, CONTRERAS-GONZÁLEZ, Meliza, BONFIL-BARRAGÁN, Erika y GARDUÑO-ALARCÓN, Dulce

Benemérita Universidad Autónoma de Puebla, Facultad de Ciencias de la Computación

ID 1^{er} Autor: *Pedro, Bello-López* / **ORC ID:** 0000-0001-8862-064X

ID 1^{er} Coautor: *Meliza, Contreras-González* / **ORC ID:** 0000-0003-3375-4493

ID 2^{do} Coautor: *Erika, Bonfil-Barragán* / **ORC ID:** 0000-0002-2671-4533

ID 3^{er} Coautor: *Dulce, Garduño-Alarcón* / **ORC ID:** 0000-0001-6461-1095

Abstract

Today companies are faced with several challenges to select a candidate for a position, this leads to risks that may affect the stability of the company by a wrong selection. For this reason, it is necessary to implement a strategy for increasing the selective quality of a resource, this is intended to enable the company perform an automated recruitment based on a model that allows matching between companies and employees, this will bring benefits in the short and long term, in this case entails obtaining a recruitment of personal that have more skills for the vacancy and the companies retain the best talents, as well as generates a labor and economic stability for the employee. Using a software development methodology, the analysis of the system requirements was made, matching model was designed to adjust the relationship company-employee and displaying graphs were generated for the distribution of opportunities with regard to the candidates for a position. We conclude that this system will support the companies and candidates to establish a relationship where both are benefited.

Keywords

Labor exchange, Matching problem, Data visualisation

Sistema web para la clasificación de estudiantes candidatos para el apoyo de préstamos comunitarios

Web system for the classification of students candidates for the support of Community loans

CONTRERAS-GONZÁLEZ, Meliza, BELLO-LÓPEZ, Pedro, CERVANTES-MÁRQUEZ, Ana y RODRIGUEZ-HERNÁNDEZ, Miguel

Benemérita Universidad Autónoma de Puebla, Facultad de Ciencias de la Computación

ID 1^{er} Autor: *Meliza, Contreras-González* / **ORC ID:** 0000-0003-3375-4493

ID 1^{er} Coautor: *Pedro, Bello-López* / **ORC ID:** 0000-0001-8862-064X

ID 2^{do} Coautor: *Ana, Cervantes-Márquez* / **ORC ID:** 0000-0002-4246-102X

ID 3^{er} Coautor: *Miguel, Rodriguez-Hernández* / **ORC ID:** 0000-0002-6628-462X

Abstract

Students do not have an effective culture in personal finance, which leads to having to find part-time jobs, borrow friends to pay their expenses, so it is necessary to develop a web system that allows store through the history of payments and commitments of student debtors in the management of loans in its student community. U Using a unified process methodology, information on vendors and customers was stored in the system and classified into categories using Naive Bayes. We conclude that this system will support University creditors to support decisions of the next College loans allowing participation without losing its resources.

Keywords

Repository, Personal finances, Decision-support system

Implementación de una función en Mysql para determinar la edad

Implementation of a function in Mysql to determine the age

ARRIETA-ZUÑIGA, Juan, LEON-OLIVARES, Eric, MARTINEZ-PAGOLA, Salvador, MAGGINATALE, Carlos y JIMENEZ-GARCÍA, Lizandro

Tecnológico Nacional de México/Instituto Tecnológico de Pachuca

ID 1^{er} Autor: *Juan, Arrieta-Zuñiga* / **ORC ID:** 0000-0001-9698-788x, **Researcher ID Thomson:** M-9232-2018, **arXiv ID:** jaaz1967

ID 1^{er} Coautor: *Eric, Leon-Olvares*/ **ORC ID:** 0000-0002-6342-3719, **Researcher ID Thomson:** L-7445-2018, **iralis ID:** **MXINF2704 MXINF2704 MXINF2704 MXINF2704**

ID 2^{do} Coautor: *Salvador, Martinez-Pagola*/ **ORC ID:** 0000-0003-4937-0996, **Researcher ID Thomson:** 6239-2018, **arXiv:** smpagola2000.1

ID 3^{er} Coautor: *Carlos, Maggi-Natale*/ **ORC ID:** 0000-0002-3042-4109, **Researcher ID Thomson:** P-4747-2018, **NCBI:** zgatoteado

ID 4^o Coautor: *Lizandro, Jiménez-García*/ **ORC ID:** 0000-0001-8932-747X, **Researcher ID Thomson:** O-8745-2018, **arXiv:** lizandro030795

Abstract

In some computer systems it is necessary to calculate the age or time elapsed between two dates to carry out other calculations or issuance of reports. As you know this data is a calculated field because it is dynamic in relation to the date. Currently there is no library function in MYSQL to calculate this value directly, for this reason this article shows the development and implementation of this function. To do this, first investigate the date functions included in MYSQL and determine if any of them meet our need to find the difference in years between two dates, then create at least four formulas, and then carry out several Testing in tables with one, two, and three million records to determine which of them is more efficient in relation to the time spent calculating, it is also important to mention that the date values must be pre-validated.

Keywords

Calcúlate age, Date functions, MySQL Libraries

Sistema de control de propiedades en un invernadero de uso doméstico

Properties control system in a greenhouse for domestic use

GÓMEZ-MERCADO, Abdiel, MARTÍNEZ-BUTRÓN, Luis, LEÓN-CASTELAZO, Francisco y RESÉNDIZ-ROSAS, Celerino

Tecnológico Nacional de México/I.T. Pachuca. División de Estudios de Posgrado e Investigación. Carretera México-Pachuca Km 87.5, C.P. 42080, Colonia Venta Prieta Pachuca, Hidalgo, México

ID 1^{er} Autor: *Abdiel, Gómez-Mercado* / **ORC ID:** 0000-0002-3409-6851; **Researcher ID Thomson:** P-7684-2018, **PubMedAuthor ID:** abd131_gm

ID 1^{er} Coautor: *Luis, Martínez-Butrón* / **ORC ID:** 0000-0003-1929-4590

ID 2^{do} Coautor: *Francisco, León-Castelazo*

ID 3^{er} Coautor: *Celerino, Reséndiz-Rosas* / **ORC ID:** 0000-0003-3197-2876, **Researcher ID Thomson:** P-6224-2018; **Mendeley ID:** Celerino Reséndiz-Rosas

Abstract

The purpose of this research was to develop a system that controls the climatic conditions inside the greenhouse in order to maintain production during all seasons of the year. The methodology developed is applied to domestic greenhouses, low production and low cost of implementation. As an experimental facility, a small greenhouse was used, where humidity and temperature data were obtained inside it. The tests were designed for two different crops: tomato and lettuce, for a month and taking readings throughout the day, in order to ensure repeatability and give reliability to the experiment. The experimental results obtained are satisfactory, since variations are only ± 2 degrees with respect to the desired temperature; while for humidity a range of $\pm 15\%$ was obtained with respect to the expected values. Likewise, a study was carried out to determine the properties of the water used in the irrigation, recording the pH values of the water at the exit of the prototype, which were within the applicable standard. The use of solar energy by means of heaters and photovoltaic panels increases the profitability of the proposed system and contributes to sustainable development.

Keywords

Greenhouse, Air Conditioning, Solar energy, Sustainability

Implementación de un controlador difuso de temperatura desarrollado en un sistema embebido Raspberry Pi

Implementation of a fuzzy temperature controller developed in an embedded Raspberry Pi system

GARCÍA-MARTÍNEZ, José Román, RAMÍREZ-GONZÁLEZ, Luis David, EDSON-CRUZ, Miguel y MARTÍNEZ-SÁNCHEZ, Trinidad

Universidad Autónoma de Querétaro, Cerro de Las Campanas, s/n, Col. Las Campanas, 76010 Santiago de Querétaro.

ID 1^{er} Autor: *José Román, García-Martínez* / **ORC ID:** 0000-0001-5773-6068, **CVU CONACYT ID:** 778619

ID 1^{er} Coautor: *Luis David, Ramírez-González* / **ORC ID:** 0000-0003-1886-2330

ID 2^{do} Coautor: *Miguel, Edson-Cruz* / **ORC ID:** 0000-0001-6450-875X, **CVU CONACYT ID:** 632744

ID 3^{er} Coautor: *Trinidad, Martínez-Sánchez* / **ORC ID:** 0000-0002-7493-3079

Abstract

In this article, a practical application of a fuzzy temperature controller developed in an embedded Raspberry Pi 3 system is presented, to control the temperature of a didactic oven based on artificial intelligence, to design the controller Python 2 programming language was used, as well as to control the GPIO's (General-Purpose Input / Output) of the Raspberry Pi. The objective of the controller is to maintain the temperature of the system in a proposed range, which allowed to drive different devices using a control signal. In the sampling time of 2 seconds, the sensor captured the real temperature and could pass it to the fuzzification process, manipulating the signal in the form of fuzzy quantities, thus taking the process of defuzzification to obtain the control signal, which will interact with the final actuators.

Keywords

Fuzzy controller, Embedded system, Raspberry Pi

Simulador de dominio MPLS

MPLS domain simulator

MENDOZA-AUSTRIA, Luis, PÉREZ-HERNÁNDEZ, Darío, LEÓN-OLIVARES, Eric y MARTINEZ-PAGOLA, Salvador

Instituto Tecnológico de Pachuca

ID 1^{er} Autor: *Luis, Mendoza-Austria* / **ORC ID:** 0000-0002-1572-2159, **Researcher ID Thomson:** P-4842-2018, **NCBI:** mendozaaustria

ID 2^{do} Coautor: *Darío, Perez-Hernández* / **ORC ID:** 0000-0003-2147-3141, **Researcher ID Thomson:** P-6763-2018, **NCBI:** darioph

ID 3^{er} Coautor: *Eric, León-Olivares* / **ORC ID:** 0000-0003-4937-0996, **Researcher ID Thomson:** 6239-2018, **arXiv:** smpaola2000#1

ID 4^{to} Coautor: *Salvador, Martinez-Pagola* / **ORC ID:** 0000-0002-6342-3719, **Researcher ID Thomson:** L-7445-2018, **MXINF2704**

Abstract

Multiprotocol label switching (MPLS) is a standard data transport mechanism created by the IETF, with the purpose of solving switching problems. In this project a software of Simulation of Domains MPLS has been developed, in charge of acting as a virtual MPLS Network, with the basic functions of this technology in such a way that the student understands the basic function of the same and simultaneously serves as a didactic tool in teaching-learning for the teacher who teaches the subject of networks. For the understanding of the work that was done within an MPLS Domain, an introduction to the subject and a theoretical MPLS framework, the analysis of the multi-labeling algorithm, the software design, the basic simulator programming, and a sample of the results.

Keywords

Domain, MPLS, IETF, Simulator, Virtual, Didactic

Sistema mecatrónico para asistencia motriz a niños con discapacidad psicomotriz

Mechatronic system for motriz assistance to children with disabilities

GONZALEZ-ISLAS, Juan, GODINEZ-GARRIDO, Gildardo y GONZALEZ-ROSAS, Angelina

Universidad Tecnológica de Tulancingo. Camino a Ahuehuetitla 301, colonia las Presas, C.P. 43645 Tulancingo, Hidalgo México

ID 1^{er} Autor: *Juan, Gonzalez-Islas* / **ORC ID:** 0000-0002-5631-028, **Researcher ID Thomson:** I-3392-2018, **arXiv Autor ID:** MZ7MAG-VRAESY, **CVU CONACYT ID:** 343166

ID 2^{do} Coautor: *Gildardo, Godinez-Garrido* / **ORC ID:** 0000-0002-2190-0660, **Researcher ID Thomson:** I-4987-2018, **arXiv Autor ID:** 8GQUZR-P8NFDZ, **CVU CONACYT ID:** 552521

ID 3^{er} Coautor: *Angelina, Gonzalez-Rosas*, **ORC ID:** 0000-0002-5631-0281, **Researcher ID Thomson:** H-2130-2018, **arXiv Autor ID:** A6JG8N-XVOGYK, **CVU CONACYT ID:** 343166

Abstract

Currently, one of the social problems on which the scientific and technological community has focused its attention is disability. This paper describes the methodology to develop the design and implementation of a mechatronic system for motriz assistance to children with disabilities. The proposed system has the objective of solving the inherent problems to the commercial systems used today for that purpose. The system developed is composed of a support structure, support subsystems of upper extremities and torso, a motor subsystem; and a controlled communication and control stage with a mobile application. Initially, the system was designed based on the requirements of the specialists, modeled in 3D and a structural analysis was developed. Subsequently, it was integrated and put into operation in the real environment. Finally, tests were carried out with children with different types of disabilities and complexions. The results obtained by the system in the tests made, allow to determine the technical feasibility to use the device for motriz assistance to children with disabilities, in a safe, stable, functional and ergonomic way; and that also reduces collateral damage in the minor's assistant.

Keywords

Motriz Assistance, Disability, Mechatronic System

Diseño de un sistema para la generación de rutas utilizando la API de Google Maps

Designing a system for generation of routes using the Google Maps API

RIFAS-MEJÍA, Francisco de Jesús, LIRA-OBANDO, Ariel, CANO-ANGUIANO, Rosa de Guadalupe y MARTÍNEZ-DURÁN, Ma. Elena

Tecnológico Nacional de México, Instituto Tecnológico de Colima

ID 1^{er} Autor: *Francisco de Jesús, Rifas-Mejía* / **ORC ID:** 0000-0001-9622-222X, **Researcher ID Thomson:** P-5967-2018, **CVU CONACYT ID:** 859705

ID 1^{er} Coautor: *Ariel, Lira-Obando* / **ORC ID:** 0000-0002-6703-3697, **Researcher ID Thomson:** G-2564-2018, **CVU CONACYT ID:** 64923

ID 2^{do} Coautor: *Rosa de Guadalupe, Cano-Anguiano* / **ORC ID:** 0000-0001-7787-9058, **Researcher ID Thomson:** D-3298-2013, **CVU CONACYT ID:** 446366

ID 3^{er} Coautor: *Ma. Elena, Martínez-Durán* / **ORC ID:** 0000-0003-1615-5130, **Researcher ID Thomson:** G-2563-2018, **CVU CONACYT ID:** 437361

Abstract

The present work describes the design of a system in web and mobile environment for the calculation of optimal routes in the process of collecting used natural oils. With the current development we aim the reduction of time and costs involved in the collection proces, as well as the handling of the data involved. We present the benefits obtained from the point of view of the collecting company, the potential customers and the general, we approach the methodology implemented in its different stages and the importance of using the Dijkstra algorithm for the calculation of optimal routes. We detail the design of the products obtained in the first stages such as the use cases, the mock-ups of web and mobile environment, the sequence diagrams for route calculation and the integration with the Google Maps API. As a result, we obtain the necessary bases to begin the development and implementation of the computer system that will lead us to achieve the proposed benefits and to be able to concentrate and process the information obtained during the collection process for the development of tools that help in decision-making.

Keywords

Route, Google Maps, Shortest Path

MOOC Aprender a Aprender: Una experiencia de diseño y desarrollo de CODAES Educación

MOOC Learning to Learn: A design and development experience of CODAES Education

CURIEL, Arturo, POZAS, Mariano, HERNÁNDEZ, David, OLGUÍN, Edgar

Universidad Autónoma del Estado de Hidalgo-Área Académica de Computación y Electrónica

ID 1^{er} Autor: *Arturo, Curiel* / **ORC ID:** 0000-0002-9383-3452, **Researcher ID Thomson:** P-6718-2018, **CVU CONACYT ID:** 255222

ID 1^{er} Coautor: *Mariano, Pozas* / **ORC ID:** 0000-0003-3502, **Researcher ID Thomson:** P-6719-2018, **arXiv Autor ID:** X_mpoz89018

ID 2^{do} Coautor: *David, Hernández* / **ORC ID:** 0000-0002-0328-303X, **Researcher ID Thomson:** P-6717-2018

ID 3^{er} Coautor: *Edgar, Olgún* / **ORC ID:** 0000-0002-9003-6511, **Researcher ID Thomson:** P-2807-2018

Abstract

This MOOC is focused on the identification of strategies that facilitate student learning, the main objective is to get them to understand the meaning of learning to learn, since the student recognizes himself as a unique being, with different types and styles of learning; in order to build cognitive tools that face the uncertainty and constant change of today's society. For the development of the MOOC, use the modified ADDIE methodology, with a clear instructional design and an evaluation process. The results obtained in this project were the creation of the MOOC of Learning to Learn, both in Spanish and in French, endorsed by the Digital Community of Management of CODAES and inserted in its platform, also presented to the Ministry of National Education of France and the French version is interoperable with the FUN platform, to date it has more than 116, 000 visits. So it is concluded that as a strategy from the pedagogical point of view, the MOOC of Learning to Learn, it is a project that contributes to strengthen the teaching and learning of students.

Keywords

MOOC, CODAES, Learning to learn

Aplicación móvil para reforzar el aprendizaje de la lengua Hñähñu

Mobile application to reinforce the learning of the Hñähñu language

ESCORZA-SÁNCHEZ, Yolanda Marysol, MARTÍNEZ-MARTÍN, Gloria, SALDAÑA-TAPIA, Yashared y MALDONADO-CATALÁN, Osvaldo

Universidad Tecnológica del Valle del Mezquital, Carretera Ixmiquilpan-Capula Km. 4, Nith, C.P.42300 Ixmiquilpan, México

ID 1^{er} Autor: *Yolanda Marysol, Escorza-Sánchez*

ID 1^{er} Coautor: *Gloria, Martínez-Martín*

ID 2^{do} Coautor: *Yashared, Saldaña-Tapia*

ID 3^{er} Coautor: *Osvaldo, Maldonado-Catalán*

Abstract

In our country there are 364 indigenous language's variants, of which, 64 of them are very high risk of extinction and 43 are high risk too. In The Valle del Mezquital, most speakers of Hñähñu language are over 60 years of age; this indicates that the new generations don't have an interest in keeping and preserving the language. This situation is because many factors like migration, new lifestyles, stigmatization towards the language's speakers, among others. The purpose of this project is to develop a tool through Mobile Application has playful and interactive activities that supports, reinforces and fosters the learning of the Hñähñu indigenous language in bilingual elementary schools in the municipality of Ixmiquilpan. Development methodology was Mobile-D, an agile methodology oriented to mobile applications. For its development Android Studio, SQLite and Adobe Illustrator were used. So far, this application, is installed in the indigenous elementary school Marcelino Dávalos, so but this practice could be could be replicated in other elementary schools of the municipality with the same characteristics; In addition, with this application, it is intended to contribute to preserve the indigenous language.

Keywords

Mobile Application, Mother language, Hñähñu indigenous language

Construcción de un sistema vibratorio de dos grados de libertad: Análisis modal

Construction of a two degrees of freedom vibratory system: Modal analysis

ZUÑIGA-MOCIÑOS, Gerardo, SÁNCHEZ-VILLEGAS, Héctor Sabás y RAMÍREZ-VARGAS, Ignacio

Instituto Tecnológico de Pachuca

ID 1^{er} Autor: *Gerardo, Zuñiga-Mociños* / **ORC ID:** 0000-0002-8952-7663, **Researcher ID Thomson:** P-6230-2018, **CVU CONACYT-ID:** 935800

ID 1^{er} Coautor: *Héctor Sabás, Sánchez-Villegas* / **ORC ID:** 0000-0001-5067-9603, **Researcher ID Thomson:** P-6223-2018, **CVU CONACYT-ID:** 935799

ID 2^{do} Coautor: *Ignacio, Ramírez-Vargas* / **ORC ID:** 0000-0003-1887-8949

Abstract

In this work, the dynamic design and construction of a vibrations simulator is performed, which consists of a vibrating table adapted to a two-level structure; this allows, through the eigenvalue problem, determine the natural frequencies and vibration modes in excited systems. Knowing the vibratory response of buildings and constructions in general allows to determine in a precise way the dynamic-structural properties necessary to predict and quantify the damages caused. A comparison of answers, frequencies and displacements obtained experimentally, with respect to the theoretical results is carried on. The vibrating table can be adapted to respond to periodic and random excitations, given through a signal generator and/or function generating mechanisms. The results of this work include aspects of the rigidity and frequencies that allows obtain conclusions about the effects that two-level constructions will undergo, which will avoid irreversible damage and the resonance of the structure when it is subjected to a specific frequency. This work gives guidelines for future analysis of more complex structures. It is undoubtedly important to know in which way the structures will react to vibratory movements, since our country has several zones with high seismic activity.

Keywords

Modal Analysis, Vibrating Modes, Natural Frequency

Desarrollo de interface de usuario para el análisis de vibraciones mecánicas desarrollada en LabVIEW

Development of a user interface for the analysis of mechanical vibrations developed in LabVIEW

SÁNCHEZ-TIZAPANTZI, Pedro, RODRÍGUEZ-GARCÍA, Fernando y HERNANDEZ-BLANQUEL, Paul Martin

Instituto Tecnológico Superior de San Martín Texmelucan C.P. 74120 Puebla.

ID 1^{er} Autor: *Pedro, Sánchez-Tizapantzi* / **ORC ID:** 0000-0001-5861-4724, **Researcher ID Thomson:** P-6723-2018, **arXiv ID:** pedro.sntz#1, **CVU CONACYT ID:** 445617

ID 1^{er} Coautor: *Fernando, Rodríguez-García* / **ORC ID:** 0000-0002-4621-1845, **CVU CONACYT ID:** 161277

ID 2^{do} Coautor: *Paul Martin, Hernandez-Blanquel* / **ORC ID:** 0000-0002-8164-9332, **CVU CONACYT ID:** 906207

Abstract

Currently commercial software and specifically those of vibration analysis have very high costs and are not adaptable for more modules of specific use, there are also versions developed by companies that make software and hardware in graphic language, such is the case of ABSignal ModalVIEW software, from the company National Instruments, which is developed in its software LabVIEW and which is designed to help you easily acquire multichannel signals of sound and vibration from a running machine or to obtain the static or dynamic load of a structure when using hardware from data acquisition, which has a cost of pure software of MX \$ 95,000, considering using the recommended hardware which exceeds MX \$ 500,000. In this work we will develop a software that acquires and stores vibration signals for post-processing, doing it to the needs that are required and doing it so that any module can be added for future extensions using the LabVIEW platform, adapting range sensors low, obtaining a software of very low cost and specific functionality for academic applications, research and predictive maintenance.

Keywords

Vibration, LabVIEW, Data acquisition

Diseño de un prototipo híbrido (eólico-solar) para el ahorro energético en instalaciones de crianza de peces comerciales

Design of a hybrid prototype (wind-solar) for energy saving in commercial fish breeding facilities

CU-AVILES, Edgar Manuel', GUILLEN-TAJE, José Luís, CASADO-RAMIREZ, Eliezer del Jesús y VANOYE-ELIGIO, Maximiliano

'Instituto Tecnológico Superior de Escárcega. Calle 85 s/n entre 10B.Col. Unidad, Esfuerzo y Trabajo No. 1

ID 1^{er} Autor: *Edgar Manuel, Cu-Aviles* / **ORC ID:** 0000-0003-3063-0938, **Researcher ID Thomson:** O-9743-2018, **CVU CONACYT ID:** 928829

ID 1^{er} Coautor: *José Luís, Guillen-Taje* / **ORC ID:** 0000-0002-9226-872X, **Researcher ID Thomson:** O-9770-2018, **CVU CONACYT ID:** 928940

ID 2^{do} Coautor: *Eliezer del Jesús, Casado-Ramirez* / **ORC ID:** 0000-0001-8059-984X, **Researcher ID Thomson:** O-9780-2018, **CVU CONACYT ID:** 327437

ID 3^{er} Coautor: *Maximiliano, Vanoye-Eligio* / **ORC ID:** 0000-0002-6438-9479, **Researcher ID Thomson:** P-3828-2018, **CVU CONACYT ID:** 324415

Abstract

The use of clean energy has grown significantly in Mexico given the direct economic and environmental benefits that come with it. In aquaculture, the use of energy is expensive, which is why techniques and processes are sought that help reduce energy consumption, mainly in the oxygenation of ponds for the intensive breeding of commercial fish. The present work proposes the implementation of a hybrid prototype for the generation of energy. This was achieved through a wind turbine connected in parallel to a solar panel, together the energy efficiency is higher, which is redirected to a charge controller to store it in batteries, and to take advantage of the energy in the form of direct current to alternating current, and in this way achieve an effective performance of the equipment used in the oxygenation of commercial fish hatcheries. The results indicate that the most suitable form for an optimal use of this system is to locate the nursery ponds in cascade, using a single solar pump to oxygenate more than one pond, reducing the energy consumption and therefore lowering the cost of production.

Keywords

Aquaculture, Clean energies, Hybrid system, Campeche

Revisión literaria tecnológica de dispositivos y métodos para monitoreo de la frecuencia cardíaca fetal

Literary technological review of devices and methods for monitoring of fetal heart rate

SÁNCHEZ-MALDONADO, Alonso Angel¹, MARTÍNEZ-DURÁN, Ma. Elena¹, ALVARADO-AGUILAR, Jorge Eduardo² y CANO-ANGUIANO, Rosa de Guadalupe¹

¹Instituto Tecnológico de Colima; C.P. 28976 Villa de Álvarez, Colima, México

²Soluciones Médicas del Pacífico S.A. de C.V; C.P. 28869, Manzanillo, Colima, México

ID 1^{er} Autor: *Alonso Angel, Sánchez-Maldonado* / CVU CONACYT ID: 859710

ID 1^{er} Coautor: *Ma. Elena, Martínez-Durán* / ORC ID: 0000-0003-1615-5130, Researcher ID Thomson: G-2563-2018, CVU CONACYT ID: 437361

ID 2^{do} Coautor: *Jorge Eduardo, Alvarado-Aguilar* / CVU CONACYT ID: 372974

ID 3^{er} Coautor: *Rosa de Guadalupe, Cano-Anguiano* / ORC ID: 0000-0001-7787-9058, Researcher ID Thomson: D-3298-2013, CVU CONACYT ID: 446366

Abstract

This article is the result of an investigation into devices to detect fetal heart rate, emerging from the need to explore at a national level a way to reduce maternal and infant mortality caused by cardiovascular problems in the stage of pregnancy. It describes the problem of mortality and diseases related to the circulatory system, same as detected by the electrocardiogram, which analyze the wave pattern of the heartbeat cycle, representing the QRS complex for heartbeat count., then the medical devices are described, various company products created for fetal monitoring, followed we found the patents of devices and others not yet used but with theoretical models proven to cover the needs of the monitoring, The needs are also presented based on the software that these devices must comply with, as well as the general functionalities to isolate the signal of the fetal heart rate from a signal contaminated by the artifacts of the mother's body. Finally, we propose the creation of a device that meets the main requirements and that takes the advantages and disadvantages of products and patents.

Keywords

Fetal heart rate, QRS complex, Medical devices

Tratamiento de lodos generados por electrocoagulación de lixiviados del relleno sanitario El Huixmí

Treatment of sludge generated by electrocoagulation of leachate from El Huixmí Sanitary landfill

OCAMPO-RODRÍGUEZ, Dulce Brigitte¹, QUERO-GUTIÉRREZ, Edgar² y LEÓN-CASTELAZO, Yolanda¹

¹*Tecnológico Nacional de México/Instituto Tecnológico de Pachuca*

²*Centro Nacional de Innovación y Transferencia de Tecnología de Hidalgo*

ID 1^{er} Autor: *Dulce Brigitte, Ocampo-Rodríguez* / **ORC ID:** 0000-0002-9307-3641, **Researcher ID Thomson:** P-6586-2018, **PubMed ID:** dulce_ocampo

ID 1^{er} Coautor: *Edgar, Quero-Gutiérrez* / **ORC ID:** 0000-0001-6071-4273, **Researcher ID Thomson:** P-7224-2018, **PubMed ID:** edgarq

ID 2^{do} Coautor: *Yolanda, León-Castelazo* / **ORC ID:** 0000-0001-5139-8803, **Researcher ID Thomson:** P-6775-2018, **arXiv Autor ID:** yola-37

Abstract

In landfills are recovered leached that constitute an important source of pollution that could seep through the subsoil and reach the groundwater. A favorable method to treat these leachates is electrocoagulation, where small elements are precipitated in sludge form, which when purified can be used in agricultural activities. The objective of this research was to propose a treatment of the sludge formed when treating leachates from the El Huixmí landfill located in the municipality of Pachuca de Soto, Hidalgo; in order to standardize them and for later use. The field research carried out was analytical and observational. The determinations and the leachate analyzes were carried out before and after the electrocoagulation, in the soil laboratory of the Centro Nacional de Innovación y Transferencia de Tecnología de Hidalgo]. The results obtained show that during the electrocoagulation process the concentration of some important elements and minimum of contaminants increased, fulfilling in that case the corresponding part of the norm NOM-004-SEMARNAT-2002. For the use of the sludge obtained in agricultural soils, the elimination of sodium by ion exchange and the addition of mycorrhizae allowing the absorption of phosphorus are recommended.

Keywords

Sanitary Landfill, Leachate, Electrocoagulation, Sludge

Consecuencias de la electropolución causada por la telefonía móvil en los hábitos de las abejas (*Apis melifera* L.)

Consequences of electropollution caused by mobile telephony in the habits of bees (*Apis melifera* L.)

LEGUIZAMO-HERNÁNDEZ, Miriam & CONTRERAS-RAMOS, Juan

Instituto Tecnológico Superior de la Sierra Norte de Puebla

ID 1^{er} Autor: *Miriam, Leguizamo-Hernández* / **ORC ID:** 0000-0002-8399-0411, **Researcher ID Thomson:** P-5243-2018, **CVU CONACYT ID:** 514557

ID 1^{er} Coautor: *Juan, Contreras-Ramos* / **ORC ID:** 0002-2145-3581, **Researcher ID Thomson:** Q-4125-2018

Abstract

The decrease in the population of bees worldwide is due to the indiscriminate use of fungicides and pesticides according to Díaz (2015). Currently there is another possible cause little known or widespread and is due to the electropolución generated by transformers, appliances, cell phones and Wi-Fi signals. To bees and migratory birds this artificial radiation disorients them, causing them to die when they get lost, since they can not reach their destination (Warnke, 2007). In this research bees were exposed to the radiation emitted by a cell phone that transmits a SAR equivalent to 1.49 W / Kg and 52% reacted by moving the abdomen in the direction of the cell phone, it was also observed that the number of calls affects the time of escape of the bees when released from the trap according to the Tukey test ($\alpha 0.05$). Under normal conditions bees did not exhibit the aforementioned behavior. As a solution, the creation of an antenna to reject the radiation emitted by the cellular telephony to protect the hives decreasing the high levels of radiation is exposed. It is expected to reinforce this hypothesis with a second phase of this project.

Keywords

Apis melifera L., Electropolucion, Collapse

Modelo conceptual de gestión para la trazabilidad en la Industria Acuícola de Pequeña Escala

Conceptual management model for traceability in the Small-Scale Aquaculture Industry

VILLALOBOS-GÓMEZ, Joel Alejandro, VERDUZCO-RAMÍREZ, Jesús Alberto, GARCÍA-DÍAZ, Noel y OLIVO-GUTIÉRREZ, Mauricio

Instituto Tecnológico de Colima; División de Estudios de Posgrado e Investigación

ID 1^{er} Autor: *Joel Alejandro, Villalobos-Gómez* / **Researcher ID Thomson:** P-1350-2018, **CVU CONACYT ID:** 783359

ID 1^{er} Coautor: *Jesús Alberto, Verduzco-Ramírez* / **ORC ID:** 0000-0001-5041-3741, **CVU CONACYT ID:** 256074

ID 2^{do} Coautor: *Noel, García-Díaz* / **CVU CONACYT ID:** 292758

ID 3^{er} Coautor: *Mauricio, Olivo-Gutiérrez* / **Researcher ID Thomson:** P-1881-2018, **CVU CONACYT ID:** 783367

Abstract

In this paper, a management model was developed for small-scale aquaculture traceability, for the implementation of the ISO 16741:2015 standard and the recommendations of the manual of good aquaculture production practices, with which, to carry out a historical record from the preparation of the pond to its harvest; allowing the capacity to reconstruct the production history of each batch of the cultivation cycles, as well as the monitoring and management of ponds on the farm. The system was developed in accordance with the standard for the traceability of crustacean products, under the traditional approach methodology. The present work, exposed that the correct follow-up of this management model, allows the appropriate decision making based on the information obtained from the set of a water quality monitoring system and an information system for the registration of traceability events, making evident that, to guarantee the safety and optimal quality of the food products, it is necessary that the companies that produce them, have the technological tools that allow them to maintain a cycle of continuous improvement.

Keywords

Aquaculture, Colima, Traceability

Optimización de la distribución de hielo de una empresa Hidalguense en el Estado de México

Product distribution optimization of an Hidalgo's small ice factory in the State of Mexico

PÉREZ-RAMÍREZ, Carlos Manuel & RUIZ-ESCAMILLA, Pedro César

Tecnológico Nacional de México/Instituto Tecnológico de Pachuca

ID 1^{er} Autor: *Carlos Manuel, Pérez-Ramírez* / **ORC ID:** 0000-0002-3544-9073, **Researcher ID Thomson:** P-2410-2018, **CVU CONACYT ID:** 931752

ID 1^{er} Coautor: *Pedro César, Ruiz-Escamilla* / **ORC ID:** 0000-0002-8759-0124, **Researcher ID Thomson:** P-1986-2018, **arXiv Autor ID:** clucker92

Abstract

To minimize the total distance traveled by a delivery vehicle of ice bags to a maximum of 40 customers in a wide geographical area, a binary integer linear programming model has been built in a spreadsheet application whose optimizer determines the order to visit each client. The problem is modeled as a directed graph in which the nodes are the customers and the arcs are the road network that connects them: as the starting and ending node of the route is the plant where the ice is manufactured and bagged, and each node is visited exactly once, the structure corresponds to the so-called asymmetric traveler salesman problem. With a total of forty customers, a model of forty-one nodes has been developed and used as a template to solve the network of approximately twenty customers to visit each time. The expected savings in distance traveled on a given route is around 9%, estimated from a sample of tours based on the driver's experience. In a second model the route of minimum travel time is obtained, with a similar savings (13%).

Keywords

Optimization, Transportation, Traveling-salesman

Evaluación de la energía solar como alternativa para un sistema de climatización en invernaderos

Evaluation of solar energy as an alternative for a climate control system in greenhouses

GÓMEZ-MERCADO, Abdiel, JUÁREZ-PLATA, Allin, RESÉNDIZ-ROSAS, Celerino y ÁVILA-DÁVILA, Érika

Tecnológico Nacional de México/Instituto Tecnológico de Pachuca. División de Estudios de Posgrado e Investigación. Carr. México-Pachuca Km 87.5 Col. Venta Prieta C.P. 42080 Pachuca, Hgo.

ID 1^{er} Autor: *Abdiel, Gómez-Mercado* / **ORC ID:** 0000-0002-3409-6851, **Researcher ID Thomson:** P-7684-2018, **PubMed ID:** abd131_gm

ID 1^{er} Coautor: *Allin, Juárez-Plata* / **ORC ID:** 0000-0002-1548-7355, **Researcher ID Thomson:** P-5343-2018; **arXiv ID:** 2366149

ID 2^{do} Coautor: *Celerino, Reséndiz-Rosas* / **ORC ID:** 0000-0003-3197-2876, **Researcher ID Thomson:** P-6224-2018, **Mendeley ID:** Celerino Reséndiz-Rosas

ID 3^{er} Coautor: *Érika, Ávila-Dávila* / **ORC ID:** 0000-0002-9365-6214

Abstract

The production of greenhouse crops has become an expanding activity worldwide. The use of fossil fuels to weather the appropriate climatic conditions within the protected spaces is costly and harmful to the environment. The selection of a heating-ventilation system for greenhouses that works with solar energy, either thermal or photovoltaic, is the object of study of this document. As a case of study, a greenhouse located at the Instituto Tecnológico de Pachuca was used for research. From a thermal balance and with the use of the Wolfram Mathematica 11® software, the temperature and humidity values inside the greenhouse were obtained for any season of the year. Using the Photovoltaic Systems Selection simulator of the Universidad Autónoma de Chapingo, the equipment was chosen and the costs of a photovoltaic system for heating-ventilation of the greenhouse were calculated. Likewise, the equipment was determined and the costs for the installation of a solar collector were estimated. The evaluation consisted of a cost-benefit analysis of these both alternatives, resulting selected the use of solar photovoltaic energy for the operation of the heating-ventilation system of the greenhouse.

Keywords

Greenhouse, Air conditioning, Thermal balance, Photovoltaic solar energy

Análisis del uso de biomasa en sistema alternativo de microgeneración

Analysis of biomass used as fuel in an alternative system for micro-generation

BEDOLLA-HERNANDEZ, Jorge, BEDOLLA-HERNANDEZ, Marcos, FLORES-LARA, Vicente y MORA-SANTOS, Carlos

Tecnológico Nacional de México/I.T. Apizaco

ID 1^{er} Autor: *Jorge, Bedolla-Hernandez* / **ORC ID:** 0000-0003-3856-6061, **CVU CONACYT ID:** 83901, **SNI:** 36612

ID 1^{er} Coautor: *Marcos, Bedolla-Hernandez* / **ORC ID:** 0000-0001-9668-2779, **CVU CONACYT ID:** 92081

ID 2^{do} Coautor: *Vicente, Flores-Lara* / **ORC ID:** 0000-0001-5029-9707, **CVU CONACYT ID:** 121181

ID 3^{er} Coautor: *Carlos, Mora-Santos* / **ORC ID:** 0000-0002-6050-6578, **CVU CONACYT:** 49134

Abstract

In this study a system for micro-generation is presented. The system is constituted by a couple of secondary systems, including a boiler and a non-conventional micro-turbine. The boiler has a capacity of 15 L and the turbine was designed for 1 kW of shaft power. The boiler was designed to use as combustible either LP gas or solid biomass, it making just minor changes in the combustion zone. The type of micro-turbine was considered taking account that system could operate without constant fluid flow, with intermittent velocity and inclusive with biphasic flow. The, the study was focused in analysing an equivalent system for micro-generation with solid biomass. For combustion process was considered the schemes with LP gas and biomass, and then the results in each case were compared. In the comparison, the parameters of temperatures and pressure in the boiler were analyzed, as well as, the velocity in the turbine shaft as a time function is monitored. The results show the feasibility to use solid biomass in the alternative system analyzed for microgeneration.

Keywords

Biomass, Microgeneration, Microturbine

Aplicación de sensores inerciales para análisis de marcha humana

Application of inertial sensors at human gait analysis

MARTÍNEZ-SOLÍS, Fermín¹, VERGARA-LIMON, Sergio², RAMÍREZ-BETANCOUR, Reymundo¹ y OLMOS-LÓPEZ, Armando¹

¹ Universidad Juárez Autónoma de Tabasco. División Académica de Ingeniería y Arquitectura

² Benemérita Universidad Autónoma de Puebla. Facultad de Ciencias de la Electrónica

ID 1^{er} Autor: *Fermin, Martínez-Solís* / **Researcher ID Thomson:** P-6735-2018, **CVU CONACYT ID:** 64026

ID 1^{er} Coautor: *Sergio, Vergara-Limon* / **CVU CONACYT ID:** 22133

ID 2^{do} Coautor: *Reymundo, Ramírez-Betancour* / **Researcher ID Thomson:** P-5945-2018, **CVU CONACYT ID:** 161945

ID 3^{er} Coautor: *Armando Olmos-López* / **Researcher ID Thomson:** H-1677-2018, **CVU CONACYT ID:** 41944

Abstract

In this work, an electronic system with inertial sensors to analyze normal gait, pathology, and detecting events that help identify falls is designed. An FPGA and four inertial sensors were used to achieve a real-time measurement system. For both lower limbs, an accelerometer was placed on the thigh to estimate the hip angle and another accelerometer on the leg to estimate the angle of the knee. The design of firmware and software allowed a delay time between readings of 724 μ s. The sampling rate was 250 Hz. The electronic system was validated with an encoder of 655,360 p / rev, which was used to identify an error of 0.75 ° on average. We analyzed the gait of 10 healthy subjects of Mexican phenotype from whom gait patterns were obtained showing periodic and alternating movements; also, a correlation of movement between the hip and knee joint was identified. We also identify particular movements related to the screw-home of the knee. It is intended that with the identification of particular movements, this can be used to detecting human falls and so, design algorithms to prevent falls in older adults.

Keywords

Gait, Inertial sensors, Real-Time, Systems

Análisis numérico por el Método de Elementos Finitos de una zapata de tipo tambor

Numerical analysis by the Finite Element Method of a drum type shoe

VILLAGÓMEZ-Gerardo, HERNÁNDEZ-Bernabé, MARTÍNEZ-Armando y HERNÁNDEZ-Alberto

Universidad Politécnica de Pachuca

ID 1^{er} Autor: *Gerardo, Villagómez* / **ORC ID:** 0000-0001-9813-491X, **CVU CONACYT ID:** 424482

ID 1^{er} CoAutor: *Bernabé, Hernández* / **ORC ID:** 0000-0002-5305, **CVU CONACYT ID:** 1480

ID 2^{do} CoAutor: *Armando, Martínez* / **ORC ID:** 0000-0002-9252-1043, **CVU CONACYT ID:** 238703

ID 3^{er} CoAutor: *Alberto, Hernández* / **ORC ID:** 0000-0003-1312-702X, **CVU CONACYT ID:** 507211

Abstract

In the present work, the numerical analysis was carried out using the finite element method of a heavy duty drum shoe, ANSYS software was used as computational tool. This analysis will allow manufacturers to have a wider picture regarding the validation, modification and improvement of their shoes, which are applied to the braking system. The established loading conditions and restrictions in ANSYS were obtained from the O-type braking test for disengaged engine. The material applied for the study was determined experimentally from X-ray diffraction, EDS and Vickers hardness of a commercial shoe. As a result of this work, the distribution of stresses presents on the surface and the different regions of a drum type shoe was determined. The methodology that will allow evaluating and validating different shoe geometries to determine possible faults or improvements was established from the results obtained.

Keywords

Finite element, Shoe, Distribution of stress

Absorción de energía de estructuras tipo sándwich con base cuadrada sujetas a cargas de compresión

Energy absorption of sandwich structures with square base subjected to compression loads

ESTRADA, Quirino¹, BOLAÑOS, Miguel A², SZWEDOWICZ, Dariusz³ y WIEBE-QUINTANA, Lara¹

¹ Universidad Autónoma de Ciudad Juárez, Instituto de Ingeniería y Tecnología

² Instituto Tecnológico de Pachuca/TecNM. Departamento Metal/Mecánica

³ Centro Nacional de Investigación y Desarrollo Tecnológico/TecNM. Departamento de Ingeniería Mecánica

ID 1^{er} Autor: *Quirino, Estrada* / ORC ID: 0000-0003-0623-3780

ID 1^{er} Coautor: *Miguel A, Bolaños*

ID 2^{do} Coautor: *Dariusz, Szwedowicz*

ID 3^{er} Coautor: *Lara, Wiebe-Quintana*

Abstract

In the present article a numerical analysis on energy absorption of sandwich thin-walled structures is performed. For this purpose, several square arrangements using Abaqus® finite element software were evaluated. The evaluated structures have different cross-sections, which are based on square shapes reinforced by partition plates. During the numerical evaluation, the sandwich arrangements were subjected to compression loads and evaluated by parameters such as energy absorption (Ea) and crush force efficiency (CFE). In order to get reliable results, a first numerical model was experimentally validated by a compression test. According to results and considering the same mass for all arrangements, the implementation of partition plates increases up to 16.50% the Ea parameter compared to profile without reinforcements. Regarding profiles with plates, the better performance was obtained by the structure with reinforcement in cross way. An increase of 6.75% regard to single structure in CFE parameter was computed.

Keywords

Sandwich structures, FEM, Crashworthiness

Diseño de un rotor para una turbina eólica de eje horizontal de 500 W

Design of a rotor for a horizontal axis wind turbine of 500 W

RAMIREZ-MARTINEZ, Andrés, RODRIGUEZ-CASTILLO, Mario E, VERA-CARDENAS, Edgar E, GOMEZ-MERCADO, Abdiel y MORENO-RIOS, Marisa

Tecnológico Nacional de México/Instituto Tecnológico de Pachuca, Carr. México-Pachuca Km. 87.5 Col. Venta Prieta, CP 42080, Pachuca, Hgo. México

ID 1^{er} Autor: *Andrés, Ramirez-Martinez* / **ORC ID:** 0000-0003-0661-2289, **Researcher ID Thomson:** P-5342-2018, **Mendeley ID:** andres-ramirez85

ID 1^{er} Coautor: *Mario E, Rodriguez-Castillo* / **ORC ID:** 0000-0003-2153-2105, **Researcher ID Thomson:** P-5374-2018

ID 2^{do} Coautor: *Edgar E, Vera-Cardenas* / **ORC ID:** 0000-0002-9658-0008

ID 3^{er} Coautor: *Abdiel, Gomez-Mercado* / **ORC ID:** 0000-0002-3409-6851

ID 4^{to} Coautor: *Marisa, Moreno-Rios* / **ORC ID:** 0000-0002-8041-5243

Abstract

A wind turbine is a machine that converts the kinetic energy of wind into mechanical energy and through the electric generator is transformed into electricity. The majority of territorial extension of our country, has on average low wind speeds. This research work aims to show a viable alternative to use the wind resource in these areas. This article shows the aerodynamic design process of a 500 W horizontal axis wind turbine rotor, using the Blade Element Momentum Theory (BEM). The objective is to design a wind turbine for an average speed of 4.35 m / s with a rotor diameter of 6 m. Through a comparative study, the aerodynamic profile NACA 4415 is selected, when contrasting the elevation and drag coefficients, maximum elevation is obtained and less drag compared to the compared profiles. Allowing a greater use of energy.

Keywords

Turbine, Wind, Desing, Energy

Obtención de la fuerza de empuje de una hélice y el control de su posición

Obtaining the thrust force of a propeller and control of its position

TORRES-SUAREZ, Francisco Emmanuel†, RESÉNDIZ-ROSAS, Celerino, PALACIOS-PINEDA, Luis Manuel y RAMIREZ-VARGAZ, Ignacio

Tecnológico Nacional de México/Instituto Tecnológico de Pachuca

ID 1^{er} Autor: *Francisco Emmanuel, Torres-Suarez* / **ORC ID:** 0000-0003-4779-5085, **Researcher ID Thomson:** P-4870-2018, **Mendeley ID:** francisco-emmanuel-torres-suarez

ID 1^{er} Coautor: *Celerino, Reséndiz-Rosas* / **ORC ID:** 0000-0003-3197-2876, **Researcher ID Thomson:** P-6224-2018, **Mendeley ID:** celerino-resendiz-rosas

ID 2^{do} Coautor: *Luis Manuel, Palacios-Pineda* / **ORC ID:** 0000-0001-5297-2950

ID 3^{er} Coautor: *Ignacio, Ramirez-Vargaz* / **ORC ID:** 0000-0003-1887-8949

Abstract

A platform was proposed to limit the degrees of freedom of a helicopter mounted on it, letting height as the unique degree of freedom. Through a theoretical approach the thrust force performed by the propeller, the velocity of the wind that flows through the blades and the power required to move it were determined. These results were compared with a simulation performed in ANSYS Fluent for validation purposes. The design included a 3D printed propeller, a brushless motor and an electronic speed controller (ESC). For this it was proposed that the thrust force is a function of the flow velocity, the flow velocity is a function of the power required by the motor, and in turn, this power is a function of the acceleration. Using the Euler-Lagrange equation the behavior of the system was modelled, giving a second-order differential equation that, when solved, provided the position, velocity and acceleration of the helicopter in its vertical motion. In this way, it was possible to determine the thrust force for this propeller, goal of this work.

Keywords

Thrust force, ANSYS Fluent, Open loop control

Análisis termodinámico de un recuperador de calor residual para un compresor recíprocante de 500 Hp

Thermodynamic analysis of a residual heat recovery for a 500 Hp reciprocating compressor

GÓMEZ-MERCADO, Abdiel, ISLAS-ORTIZ, Oscar, RESÉNDIZ-ROSAS, Celerino y PALACIOS-PINEDA, Luis Manuel

Tecnológico Nacional de México/I.T. Pachuca. División de Estudios de Posgrado e Investigación. Carretera México-Pachuca Km 87.5, C.P. 42080, Colonia Venta Prieta Pachuca, Hidalgo, México

ID 1^{er} Autor: *Abdiel, Gómez-Mercado* / **ORC ID:** 0000-0002-3409-6851, **Researcher ID Thomson:** P-7684-2018, **PubMed ID:** abd131_gm

ID 1^{er} Coautor: *Oscar, Islas-Ortiz* / **ORC ID:** 0000-0003-0515-6963, **Researcher ID Thomson:** P-4806-2018; **arXiv ID:** SH4Q6B-UP4LUK

ID 2^{do} Coautor: *Celerino, Reséndiz-Rosas* / **ORC ID:** 0000-0003-3197-2876, **Researcher ID Thomson:** P-6224-2018; **Mendeley ID:** Celerino Reséndiz-Rosas

ID 3^{er} Coautor: *Luis Manuel, Palacios-Pineda* / **ORC ID:** 0000-0001-5297-2950

Abstract

The thermodynamic analysis of a compact heat recuperator using the technology of Two-phase Thermosyphon Tube (TTB) is presented. This equipment will be installed in a latent residual heat recovery system generated by a 500 HP reciprocating air compressor, operating at 40 bar pressure; the recovered energy will be used to heat the water from 25 ° C to 50 ° C, for use in the health services of the CAJAPLAX Company. A mathematical calculation model is used to determine the energy balance in the hot fluid and the cold fluid; to perform this thermal analysis, the Logarithmic Mean Temperature Difference (DTML) method was chosen. In this way the heat transfer rate, the temperature difference and the heat transfer area that is required is determined; the data obtained were introduced to a design software ASPEN EXCHANGER DESIGN and RAITING V9.0, with which it was possible to evaluate its thermal performance and compare it with that of a conventional shell and tube heat exchanger. The heat recovery with TTB requires 33% of the area occupied by a conventional recuperator to recover the same amount of heat energy.

Keywords

Compact heat exchanger, Two-phase thermosyphons tube, Air compressor

Las certificaciones profesionales como estrategia de vinculación con las empresas: El caso de cisco academy

Professional Certifications as entailment strategy with companies: Instance cisco academy

OROPEZA-MENDEZ, José Martín, GARCIA-ROJAS, Jesús Alberto y SALAZAR-PEREZ, Pedro Jhoan

Instituto Tecnológico Superior del Occidente del Estado de Hidalgo

ID 1^{er} Autor: *José Martín, Oropeza-Mendez* / **ORC ID:** 0000-0003-3602-6942, **Researcher ID Thomson:** P-5729-2018, **CVU CONACYT ID:** 883665

ID 2^{do} Coautor: *Jesús Alberto, Garcia-Rojas* / **ORC ID:** 0000-0002-0292-0789, **Researcher ID Thomson:** I-9924-2018, **CVU CONACYT ID:** X_jgarcia4618

ID 3^{er} Coautor: *Pedro Jhoan, Salazar-Perez* / **ORC ID:** 0000-0002-4771-1753, **Researcher ID Thomson:** P-5730-2018, **CVU CONACYT ID:** 883360

Abstract

In the field of higher education, there is a tendency to introduce industrial certifications within educational programs as a substantive part of students' training, as indicated by the competency-based educational model of the National Technological Institute of Mexico. Currently in the ITIC Educational Program two courses of networks are taught, dominated by Cisco Certified Network Associate 1 and 2. The relationship between these certifications and their impact on graduates at the time of entering the labor market are the central axis of research made in ITSOEH. The research is cross-sectional "it collects data at a time, in a single time and its purpose is to describe variables and analyze their incidence and interrelation" (Hernández, 2003). Surveys were carried out to graduates of the last three generations to know in which IT area they were falling and from these data perform a statistical analysis. The companies were questioned about the importance of having recently graduated professionals with or without network certification. With the quantitative information collected among graduates and employers, the study shows the level of acceptance that these certifications have on the part of the industry.

Keywords

Certifications, Entailment, Industry

Implementación de una aplicación de seguros para viajeros de nivel económico A/B y C+

Implementation of an insurance application for economic travelers A / B and C +

HERNÁNDEZ-PÉREZ, Roberto & GARCÍA-HERNÁNDEZ, Adrián

Tecnológico Nacional de México – Instituto Tecnológico de Pachuca

ID 1^{er} Autor: *Roberto, Hernández-Pérez* / **ORC ID:** 0000-0002-7141-1304, **Researcher ID Thomson:** Q-2019-2018, **arXiv ID:** RobertoHP

ID 1^{er} Coautor: *Adrián, García-Hernández* / **ORC ID:** 0000-0003-4351-1129, **Researcher ID Thomson:** Q-2395-2018, **arXiv ID:** AdrianGarher

Abstract

Depending on the insurance companies, they emphasize that everyone must be insured. This is the case of travellers who, for reasons of pleasure or business, might have an incident. Obviously not all persons can face these insurances; although the insurance cost is small, not all of people have this culture. Hence, these insurance policies have been developed for the tourist market of economic level A/B and level C+. This article presents an implementation for the company TRAVELLER dedicated to selling travel insurance but in itself it is an intermediary between the travellers and the company Allianz Global Assistance who gives the backing to these insurances. The contribution of this implementation in a form of an application for desktop or mobile devices is that users can use it before making a trip, so it can help the travellers to forget about incidents that they could have in their trip. The methodologies used for its development were cascade, incremental and spiral. The result of this methodology is the implementation itself and as a conclusion we can mention that the company has it on an Internet test server.

Keywords

Mobile application, Software development, Software engineering

Herramientas web 2.0 en apoyo a tutoría en el IT Pachuca

Web 2.0 tools in support of IT mentoring Pachuca

MARTÍNEZ, Salvador, ARRIETA, Alejandro, ENCISO, Angélica y PIÑA, Denisse

Tecnológico Nacional de México / I.T. Pachuca

ID 1^{er} Autor: *Salvador, Martínez* / **ORC ID:** 0000-0003-4937-0996, **Researcher ID Thomson:** N-6239-2018, **ArVix ID:** smpagola2000#1

ID 1^{er} Coautor: *Alejandro, Arrieta* / **ORC ID:** 0000-0001-9698-788x, **Researcher ID Thomson:** M-9232-2018, **ArVix ID:** jaaz1967

ID 2^{do} Coautor: *Angélica, Enciso* / **ORC ID:** 0000-0001-6337-6847, **Researcher ID Thomson:** P-6568-2018, **ArVix ID:** AEnciso

ID 3^{er} Coautor: *Denisse, Piña* / **ORC ID:** 000-0002-6132-0396, **Researcher ID Thomson:** P-3906-2018, **arXiv ID:** Denisse

Abstract

It is known the importance and boom that the applications of the Internet have gained in our days, the capacity of mobility and connectivity are the strength that has facilitated the communication in many aspects. The present work has the purpose of verifying the impact of the use of tools that work in the Web 2.0 platform, in support of the Institutional Tutoring Program (PIT) implemented by the Tecnológico Nacional de México, specifically in IT Pachuca, is evaluated the performance of the PIT and the Tutorial Action Plan (PAT), as well as the participation and degree of acceptance that the program reaches in the students. This evaluation will be carried out through the application of the instruments established in the tutoring guidelines; which will be analyzed through a quantitative methodology based on a suitable sample selection and a field exploration that will allow obtaining satisfactory results for the determination of the degree of student acceptance of the program, its relevance and that also obtain sufficient parameters to undertake actions of improvement to the PIT.

Keywords

Tutoring, WEB 2.0, Plan, Guidelines

Revisión estructural del puente El Colorado bajo la norma SCT

Structural revision of the El Colorado bridge under the SCT standard

KAMPFNER-RODRÍGUEZ, Oscar, GARCÍA-URBINA, José, SILVA-BADILLO, Martín y ARELLANO-PEÑAFIEL, Uriel

Tecnológico Nacional de México / Instituto Tecnológico de Pachuca

ID 1^{er} Autor: *Oscar, Kampfner-Rodríguez* / **ORC ID:** 0000-0002-6349-471X, **Researcher ID Thomson:** P-3894-2018, **arXiv ID:** 2362680

ID 1^{er} Coautor: *José, García-Urbina* / **ORC ID:** 0000-0001-7872-8606, **Researcher ID Thomson:** P-5694-2018, **arXiv Autor ID:** 2366990

ID 2^{do} Coautor: *Martín, Silva-Badillo* / **ORC ID:** 0000-0002-9858-5726, **Researcher ID Thomson:** P-4779-2018, **arXiv Autor ID:** 2364780

ID 3^{er} Coautor: *Uriel, Arellano-Peñañiel* / **ORC ID:** 0000-0001-7182-2616, **Researcher ID Thomson:** P-3928-2018, **arXiv Autor ID:** 2362748

Abstract

In Mexico, it corresponds to the Secretaría de Comunicaciones y Transportes (SCT) to publish the rules to develop structural projects of vehicular bridges for the different roads of the country. For this purpose, it is based on the research done by the Instituto Mexicano del Transporte (IMT). Nowadays there are vehicle bridges in operation that were designed with norms that are not in force, which consider vehicle weight that do not correspond to the current standards, that is why they must be reviewed with current regulations to determine their functionality. The case study of "El Colorado" bridge is presented, to which a detailed inspection visit was made, finding that the structure presents fissured areas. In order to review the operation conditions of the bridge, the diagrams of flexing moments and shear forces were obtained, with the standards that were used for the design of the bridge and with the valid regulations for this type of structures. It has been determined that the mechanical elements of the bridge are bigger than those within the design, which explains the fissures of the structure. A rehabilitation alternative is proposed to reinforce the structure, so the bridge can continue functioning.

Keywords

Standards, Vehicle Bridges, Mechanical Elements

4 Medicina y Ciencias de la Salud

Perspectiva de género en estudiantes universitarios. Una revisión de sus percepciones y trayectorias académicas

Gender perspective in university students. A review of your perceptions and academic trajectories

GUERRERO-AZPEITIA, Luis Arturo

Universidad Politécnica Metropolitana de Hidalgo

ID 1st Author: *Luis Arturo, Guerrero-Azpeitia* / **ORC ID:** 0000-0002-8905-7243, **Researcher ID Thomson:** P-3905-2018, **CVU CONACYT ID:** 653267

Abstract

This article aimed to characterize the perceptions of university students with regard to the gender perspective according to their academic trajectories. To achieve this goal, the object of study was constructed from a sociological perspective based on the theoretical proposal of Bourdieu in order to articulate the objective conditions and the corresponding production of subjectivity (opinions, beliefs and perceptions) of university students in two institutions of polytechnic education. Methodologically, the research was supported in a compared perspective that recovered quantitative techniques for the analysis of data such as multiple correspondence analysis and multiple stepping. The main results show the relationship between that the students show about the gender perspective and those conditions such as the academic trajectory and the socioeconomic context, consequently of the main conclusions the importance of the study of the gender perspective is highlighted by the recovery of the objective conditions of the social agents. These contributions provide both a description of the gender perspective and those elements to understand perceptions as a product of the objective conditions.

Keywords

Gender perspective, subjectivity, academic trajectories

La tutoría grupal como una estrategia de formación integral

Group tutoring as a comprehensive training strategy

JÁUREGUI-OJEDA, Ma. Guadalupe, DELGADO-CELIS, Ma. Dolores, CRUZ-RENTERÍA, María Merced and FÉLIX-JÁCQUEZ, Rosa Hilda

Tecnológico Nacional de México / Instituto Tecnológico San Luis Potosí

ID 1st Author: *Ma. Guadalupe, Jáuregui-Ojeda* / **ORC ID:** 0000-0001-5462-0197, **Researcher ID Thomson:** P-4443-2018, **arXiv Author ID:** gpejauregui ID

ID 2nd Coauthor: *Ma. Dolores, Delgado-Celis* / **ORC ID:** 0000-0003-0141-497X, **Researcher ID Thomson:** M-1649-2018, **arXiv Author ID:** ma.dolores ID

ID 2nd Coauthor: *Maria Merced, Cruz-Rentería* / **ORC ID:** 0000-0001-7498-0484, **Researcher ID Thomson:** N-4046-2018, **arXiv Author ID:** MECHE ID

ID 3rd Coauthor: *Rosa Hilda, Félix-Jáquez* / **ORC ID:** 0000-0001-6961-341X, **Researcher ID Thomson:** E-9292-2018, **arXiv Author ID:** rhfelix ID

Abstract

Group tutoring applied to a group of engineering students for four periods, with an advance of three of them. The objective was to contribute to the integral formation, including the academic aspects to acquire professional and transversal competences. The approach used was qualitative with the method Research-Action, which allows knowing at the same at that the problems posed by the participants are answered. In this case, the first step was to diagnose the problem with the results of the previous period; with this information, the action plan was built in five face-to-face sessions with the tutored students; then the review and reflection on the actions taken were carried out; the results were evaluated and the actions of the next period were replanned. The results of the integral development were the following: all the tutored students participated at least in the extracurricular activities; English learning was promoted through financial support. The skills worked were communication, tolerance and adaptation. The general culture was encouraged. The academic part was also attended promoting corrective actions to decrease the failure of the integral calculus, whose initial percentage was 29.5, remaining at the end in 5. The conclusion indicates that the mathematical failure should continue to work.

Keywords

Group tutoring, integral development, transversal skills

Análisis del Examen de Exceso General para el ISC y Estrategia para Subir Índice de Aprobación

Analysis of the General Excess Exam for ISC and Strategy to Raise Approval Index

CORONA-RAMÍREZ, Verónica, ENCISO-GONZÁLEZ, Angélica, LEÓN-OLIVARES, Eric and ESTRADA-REYES, Edna.

ID 1st Author: *Verónica, Corona-Ramírez* / **ORC ID:** 0000-0003-2825-817X, **Researcher ID Thomson:** P-7259-2018, **arXiv Author ID:** AFEDUC2765

ID 1st Coauthor: *Angélica, Enciso-González* / **ORC ID:** 0000-0001-6337-6847, **Researcher ID Thomson:** P-6568-2018, **arXiv Author ID:** AEnciso

ID 2nd Coauthor: *Eric, León-Olivares* / **ORC ID:** 0000-0002-6342-3719, **Researcher ID Thomson:** L-7445-2018, **arXiv Author ID:** MXINF2704

ID 3rd Coauthor: *Edna, Estrada-Reyes* / **ORC ID:** 0000-0002-5013-819, **Researcher ID Thomson:** P-7728-2018, **arXiv Author ID:** MXINF2766

Abstract

The General Graduation Exit Exam (EGEL) allows to measure the performance levels of students once they finish their degree. In this article, the results obtained in the general exit exam of the engineering career in Computer Systems of the Pachuca Technological Institute were analyzed. The competences that students must acquire to reach satisfactory levels of graduation were evaluated. the descriptive methodology that allowed visualizing the indicators to make decisions for the Department of Systems and Computing. The qualitative approach was used through observation techniques and interviews to evaluate various aspects of the student and the quantitative approach was added to validate statistically. In the same way, a strategy was implemented with the aspirants, increasing the approval rates of the General Exit Exam. undergraduate.

Keywords

Desempeño, EGEL, Indicators, Strategy, Learning

Alfabetización científica, indagación de las habilidades fomentadas que la propician en alumnos de secundarias públicas

Scientific literacy. Inquiry on the skills fostered by public high school students

RODRIGUEZ-RUIZ, Ana Elena, CACERES-MESA, Maritza Librada, MORENO-TAPIA, Javier and RODRIGUEZ-CASTILLO, Mario Emigdio

ID 1st Author: *Ana Elena, Rodriguez-Ruiz* / **ORC ID:** 0000-0002-0077-3164, **Researcher ID Thomson:** P-7226-2018, **arXiv Author ID:** AnaElenaRodriguez, **CVU CONACYT ID:** 895106

ID 1st Coauthor: *Maritza Librada, Caceres-Mesa* / **ORC ID:** 0000-0001-6220-0743, **Researcher ID Thomson:** T-8805-2018, **CVU CONACYT ID:** 905279

ID 2nd Coauthor: *Javier, Moreno-Tapia* / **ORC ID:** 0000-0003-4029-5440, **Researcher ID Thomson:** U-5134-2017, **CVU CONACYT ID:** 431070

ID 3rd Coauthor: *Mario Emigdio, Rodriguez-Castillo* / **ORC ID:** 0000-0003-2153-2105, **Researcher ID Thomson:** P-5374-2018, **arXiv Author ID:** EmigdioRodriguez, **CVU CONACYT ID:** 122992

Abstract

In the Mexican educational context the first grade of high school level means the ending of basic education, which has as purpose certain achievements at the end. Today in a society with scientific and technological advances it is necessary that each person is scientifically literate. For this research it has been considered as subjects of study to third grade students and this project would help to characterize the needs around scientific literacy in two different specific environments, also giving an idea about the processes and results of educational actions; with the support of a qualitative evaluation by applying a focus group with science teachers, observations to classes, and revision of the student's notebooks as a methodological strategy to triangulate the information obtained. The objective requires the determination of scientific literacy skills that are being fostered in the students considering integrating the results of the study. It is inferred that these are based on the characterization of the skills related to the achievement of the graduate profile that have been identified and the conclusions of the study are about the role of scientific literacy in the development of motives and interests in students to strengthen the science learning.

Keywords

Scientific literacy, Skills, Public high schools

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