Contents

Contributions in: Retention, Gender, Entrepreneurship, Creativity,
Motivation, Project-Based Learning, Social Responsibility, Students' Perceptions,
Graduate Attributes, Engineering Education Research, Design Education,
Spatial Skills, Technology in Education, Low-Cost Laboratories, Industrial Engineering,
Computer Engineering, Architecture Design, Communication Engineering,
Electrical Engineering, Chemical Engineering

Ahmad Ibrahim	505	Editorial
Mary Pilotte, Matthew W. Ohland, Susan M. Lord, Richard A. Layton and Marisa K. Orr	506–518	Student Demographics, Pathways, and Outcomes in Industrial Engineering
D. Jake Follmer, Sarah E. Zappe, Enrique D. Gomez, Esther W. Gomez and Shane E. Haydt	519–526	Changing the Conversation: Impact of a Seminar-Based Classroom Innovation on Student Perceptions of Engineering
Aileen Huang-Saad and Sergio Celis	527-537	How Student Characteristics Shape Engineering Pathways to Entrepreneurship Education
Kayoko Nohara, Michael Norton and Eriko Kawano	538-547	Imparting Soft Skills and Creativity in University Engineering Education through a Concept Designing Short Course
Ha Congying, Yan Zhaowen, Zhang Youguang and Su Donglin	548-557	The Open Experiment: An Experimental Graduate Course in Electronics Communications Engineering
Geoffrey L Herman, David E. Goldberg, Kyle F. Trenshaw, Mark Somerville and Jonathan Stolk	558–574	The Intrinsic-Motivation Course Design Method
Kazumasa Ohkuma, Masahiro Osogami, Naoki Shiori and Kazutomi Sugihara	575–587	Motivation Effects of Using Actual Robots Controlled by the Scratch Programming Language in Introductory Programming Courses
Aharon Gero and Shai Mano-Israeli	588–595	Analysis of the Factors Motivating Students at a Two-Year Technological College to Study Electronics
Qaiser Malik, James C. Witte, Naveed Zafar and Zamir Hussain	596–609	Influences on Freshman Attitudes toward Engineering: Lessons from a Case Study of a Major Engineering University in Pakistan
María-José Terrón-López, Yolanda Blanco Archilla and Paloma-Julia Velasco-Quintana	610–621	A Project Based Learning Experience Using NGO Projects and A Volunteer Program Abroad
Leibo Liu, Chenchen Deng, Zhaoshi Li, Shouyi Yin and Shaojun Wei	622–628	Reconfigurable Computing System: A Project-Based Course for Graduate Students
Ahmed Azmy and Hala Mokhtar	629–638	A Project-Based Framework for Teaching and Assessment of Design Modules
Idalis Villanueva and Louis Nadelson	639–652	Are We Preparing Our Students to Become Engineers of the Future or the Past?
Lawrence Meda and Arthur James Swart	653-661	Graduate Attributes in an Electrical Engineering Curriculum: A Case Study
L. C. Woollacott and L. van Dyk	662–671	Analysing Errors Students Make in Summative Tests: A Case Study in Research-Led Engineering Education
Reuven Katz and Iris Talmi	672–679	Teaching Industrial Design in Mechanical Engineering: A Laboratory for Design and Engineering
Jesús Mataix, Carlos León and Juan F. Reinoso	680–692	Factors Influencing Spatial Skills Development of Engineering Students
Tom Wanyama	693-702	Using Industry 4.0 Technologies to Support Teaching and Learning
Janko D. Jovanovic	703-711	Personalized Approach for Mobile Learning of Engineering Graphics
Óscar López-Zaldívar, Amparo Verdú-Vázquez, Tomás Gil-López and Rafael V. Lozano-Diez	712–722	The Implementation of Building Information Modeling Technology in University Teaching: The Case of the Polytechnic University of Madrid
Negar Beheshti Pour, David B. Thiessen, Robert F. Richards and Bernard J. Van Wie	723–740	Ultra Low-Cost Vacuum Formed Shell and Tube Heat Exchanger Learning Module
Irene O. Saracho-Pantoja, José R. Montejo-Garai, Jesús M. Rebollar and Jorge A. Ruiz-Cruz	741–750	Low-Cost Additive Manufacturing: A New Approach to Microwave Waveguide Engineering Education through 3D Printing
Kajan Srirangan, Lamees K. Akawi, C. Perry Chou, Marc G. Aucoin, Lyndia E. Stacey and Cheryl Newton	751–760	Use of a Case on Metabolically Engineered <i>Escherichia coli</i> to Develop a Framework for the Design and Analysis of Bioprocesses
	761	Guide for Authors

