

## CURRICULUM VITAE

**Dr. Elena Trotskovsky**

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### **Work address:**

ORT Braude College,  
Department of  
Teaching and General Studies  
P.O. Box: 78, Karmiel, 21982,  
ISRAEL.  
Tel: 972-4-9901809

### **Home Address:**

Yasmin 18/32, Karmiel,  
21940, ISRAEL

**Email:** elenatro@braude.ac.il

### **1. Academic Education**

Ph. D. 2013, Department of Education in Technology and Science, Technion, Haifa, Israel, under the supervision of Prof. S. Waks and Prof. O.Hazzan.

M.Sc. 2009, Department of Education in Technology and Science, Technion, Haifa, Israel.

M.Sc. 1978, Industrial Electronics, Faculty of Electronics, Ufa Aviation University, Ufa, Russia.

### **2. Academic Employment**

2013 – present Head, ORT Braude College, Teaching and General Studies Unit

1994 – present Adjunct Lecturer, Teacher, Senior Teacher, Lecturer, ORT Braude College, Department of Electrical and Electronics Engineering

2008 Adjunct Lecturer, the Technion – Israel Institute of Technology, Faculty of Mechanical Engineering

1980 – 1984 Lecturer, Faculty of Automation, Ufa Oil Technical University, Ufa, Russia

### **3. Academic Activities**

#### **3.1 Professional and Research Experience**

#### **3.2 Research Collaboration**

2009-2014 Collaboration with Prof. Orit Hazzan – Head of Department of Education in Science and Technology, Technion, Prof. Shlomo Waks, Technion, and Dr. Nissim Sabag, ORT Braude College.

- Research Topics: Engineering Thinking, Students' Misconceptions in Engineering Thinking**  
2010-2014 Collaboration with Dr. Nissim Sabag, ORT Braude College.
- Research Topics: Reflection in Engineering Thinking**  
2013-present Collaboration with Dr. Nissim Sabag, ORT Braude College and Dr. David Pundak - Senior Lecturer in Kinneret Academic College and Head of Web Learning Unit in ORT Braude College.
- Research Topic: Integration of MOOC courses in General Studies**  
2014-present Collaboration with Dr. Nissim Sabag and Dr. Ira Raveh, ORT Braude College.
- Research Topic: Mathematical Understanding of Engineering Students**  
2014-present Collaboration with Dr. Nissim Sabag, ORT Braude College.
- Research Topics: Engineering Students' Misconceptions of Accuracy and Estimations**  
2015 - present Collaboration with Dr. Nissim Sabag, and Dr. Hagit Krisher, ORT Braude College.
- Research Topics: Learning Styles of Engineering Students**

### 3.3 Teaching Experience

#### **ORT Braude College of Engineering:**

##### **Undergraduate Courses:**

Analog Electronics  
Methodic of Electricity and Electronics Teaching  
Switching and Digital Systems  
Digital Electronics  
Introduction to Control  
Electricity and Electronics 1  
Electricity and Electronics 2  
Digital Electronics Laboratory

#### **The Technion–Israel Institute of Technology**

##### **Undergraduate Courses:**

Introduction to Mechatronics

#### **Ufa Oil Technical University**

##### **Undergraduate Courses:**

Theory of Electrical Networks

Electrical Machines

Electrical Engineering Laboratory

#### **4. Academic and Professional Awards**

- |      |   |
|------|---|
| 2015 | Prize for outstanding member of the academic staff, ORT Braude College, Karmiel, Israel (awarded for teaching, research work and contribution to the college) |
| 2014 | Prize for outstanding member of the academic staff, ORT Braude College, Karmiel, Israel (awarded for teaching, research work and contribution to the college) |
| 2013 | Prize for outstanding member of the academic staff, ORT Braude College, Karmiel, Israel (awarded for teaching, research work and contribution to the college) |
| 2008 | Engineering Thinking, ORT Braude College Research Grant   |
| 2005 | Prize for outstanding member of the academic staff, ORT Braude College, Karmiel, Israel (awarded for teaching, research work and contribution to the college) |
| 2004 | Prize for outstanding member of the academic staff, ORT Braude College, Karmiel, Israel (awarded for teaching, research work and contribution to the college) |

#### **4.1 Membership in professional societies**

#### **5. Academic and Administrative Activities**

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|----------------|--|
| 2016           | Chair of the session at the 12 <sup>th</sup> ORT Braude College Interdisciplinary Research Conference, October 19-20, 2016, Hagoshrim                          |
| 2014           | Chair of the session at the Joint International Conference on Engineering Education & International Conference on Information Technology, Riga                 |
| 2014 - present | Head of the Team of Development Master in Engineering and Technology Education Program, ORT Braude College   |
| 2014 - 2016    | Development of Enrichment Program in General Studies, ORT Braude College   |
| 2014           | Development of new course Seminar and Final Project in Education in Mathematics and Engineering for the Master in Engineering and Technology Education Program |
| 2014           | Development of new course Aspects in Science and Engineering Thinking for the Master in Engineering and Technology Education Program                           |
| 2014           | Chair of the session at The 10 <sup>th</sup> ORT Braude College Interdisciplinary Research Conference, October 19-20, 2014, Naharia                            |

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|----------------|---|
| 2014           | Chair of the session at ICEE/ ICIT 2014 Conference, June 2– 6, Riga                                     |
| 2013 - present | Member of Collegial Pedagogical Committee   |
| 2010 – 2013    | Member of Collegial Committee of Excellence   |
| 2008           | Member of Collegial Committee of Improving Academic Counseling for Students                             |
| 2007 – present | Member of Pedagogical Committee, Electrical and Electronics Engineering Department                      |
| 2007 – 2009    | Member of Students Exception Committee, Electrical and Electronics Engineering Department               |
| 2007 – 2013    | Academic consultant of 4 <sup>th</sup> year students, Electrical and Electronics Engineering Department |
| 2004 – 2013    | Internship and projects coordinator, Electrical and Electronics Engineering Department                  |

## 6. Professional Activities

### International Conference Presentations

1. Engineering Student Solutions of Accuracy Problems: A Case Study. *2017 IACB, 2017 ICE & 2017 ICTE Conference*, Stockholm, Sweden.
2. How Do Engineering Students Solve Accuracy Problems: A Comparative Study. *International Journal of Arts & Sciences' (IJAS) International Conference for Education*, 2016, Venice, Italy.
3. Evaluation and Estimation in Engineering education: work in progress. *INTED - 10th annual International Technology, Education and Development Conference*, 2016, Valencia, Spain.
4. How Electrical Engineering Students Understand the Accuracy Concept Concerning Digitized Signals, *ICEE 2015, International Conference on Engineering Education*, 2015, Zagreb, Croatia.
5. Internship Project - Design in Industry vs. Research in Academia – A Case Study, *The 5<sup>th</sup> international conference on Education, Research & Development*, 2014, Elenite, Bulgaria.
6. How do Students Misunderstand the Concept of accuracy? – Work in progress. *6<sup>th</sup> WIETE annual conference on Engineering and Technology Education*, 2015, Bangkok, Thailand.
7. Students' Misconception of Accuracy, *ICEE/ ICIT 2014, Joint International Conference on Engineering Education & International Conference on Information Technology*, 2014, Riga, Latvia.
8. Students' Misunderstandings in Project Design Activities in Electronics. *International Conference on Engineering Education and Research ICEER – 2013*, Marrakesh, Morocco.
9. Student Achievements in Solving Problems Using Models in Electronics. *International Conference on Engineering Education ICEE – 2012*, Turku, Finland.
10. Classification of Errors, Misunderstandings and Misconceptions of Students According to Engineering Thinking Categorization. *World Engineers' Convention*, 2011, Geneva, Switzerland.
11. Internship in Engineering Design at Hi-Tech Industries: Theory and Practice. *IEEE-IBM TEE 2010 - Transforming Engineering Education conference*, Dublin, Ireland.

## 7. Plenary and Invited Talks at Conferences

### 8. Colloquium & Seminar Lectures

- 2013 Seminar at the Department of Education in Science and Technology, Technion.  
Seminar topic: **Engineering Thinking: Disciplinary Insights and Pedagogical Applications**
- 2012 Symposium “Research Trends in Engineering Education”, Ort Braude College.  
Symposium topic: **Engineering Thinking – how it can be characterized?**
- 2009 Seminar at the Department of Education in Science and Technology, Technion.  
Seminar topic: **Engineering Thinking according to Experts and Students: Theory, Implementation and Pedagogy**

## 9. List of Publications

### 9.1 Ph.D. Thesis:

Trotskovsky E. (2013). Engineering Thinking: Disciplinary Insights and Pedagogical Applications, under the supervision of Prof. S. Waks and Prof. O. Hazzan.

### 9.2 Refereed Papers

1. Sabag, N., Trotskovsky E. An Examination of the Relationship between Instructional Strategies to Learning Styles Distance and Students' Achievements, *International Journal of Engineering Education*, Vol. 32, No. 5(A), 2016, pp. 1-8. (IF = 0.582)
2. Trotskovsky, E., Sabag N. How do Students Misunderstand the Concept of accuracy? – Work in progress, *World Transactions on Engineering and Technology Education*, Vol. 12, No. 4, 2014, pp 715-719. (SJR = 0.26 )
3. Pundak, D., Sabag, N., Trotskovsky, E. Accreditation of MOOCS, *European Journal of Open, Distance and E-Learning*, Vol. 16 No. 2, 2014, pp. 116-128.
4. Trotskovsky, E., Sabag, N., and Waks, S. One output function: students' misconception in digital electronics – A case study, *Research in Science & Technological Education*, Vol. 33 No. 2, 2015, pp.131 - 142 (I.F. = 0.5)
5. Trotskovsky, E., Sabag, N. Internship Project - Design in Industry vs. Research in Academia – A Case Study. *Educational Alternatives*, Vol. 12, pp. 581-587, 2014. Published online 4 September 2014.  
<http://www.scientific-publications.net/get/1000008/1409888568209737.pdf>
6. Trotskovsky, E., Sabag, N., Waks, S., and Hazzan, O. Students' Achievements in Solving Problems Using Models and their Misunderstanding of Models in Electronics, *IEEE-Transactions on Education*, Vol. 58, No. 2, 2015, pp. 104 - 109. (I.F. = 1.221)
7. Sabag, N., Trotskovsky, E., Waks, S. Engineering Design Project as a Reflection Promoter, *European Journal of Engineering Education*, Vol. 39, No. 3, 2014, pp. 309-324. DOI: 10.1080/03043797.2013.867312 (SJR = 1.04)

8. Trotskovsky E., Waks S., Sabag N., and Hazzan O., Students' misunderstandings and misconceptions in engineering thinking. *International Journal of Engineering Education*, Vol. 29, No. 1, pp. 107–118, 2013.
9. Waks S., Trotskovsky E., Sabag N., and Hazan O., Engineering Thinking: The Experts' Perspective. *International Journal of Engineering Education*. Vol. 27, No. 4, pp. 838-851, 2011.

### **Chapters in refereed paper books**

1. Sabag N., Trotskovsky E. Students' Reflections on their Internship Design Project in Industry. *World Innovations in Engineering Education and Research*. 2012, pp. 305-313.
2. Sabag N., Trotskovsky E. Engineering Thinking: Characterization by Experts and its Appearance in Graduate Design Projects. In: W. Aung, V. Ilic, J. Moscinski, J. Uhomoibhi (Eds). *World Innovations in Engineering Education and Research*. 2011, pp. 401-411.

### **9.3 Accepted for Publications**

#### **9.4 Submitted for publications**

1. Sabag, N., Pundak, D., Trotskovsky E. An Examination of On Line Local Course Characteristics in Comparison with MOOCs – A case study, submitted to *International Journal of Engineering Education*, 2016. (IF = 0.582)
2. Rave, I., Trotskovsky, E., Sabag, N. Mathematics understanding vs. engineering understanding – the engineering students' point of view, submitted to *International Research in Higher Education*. (I.F. =1.207)

### **9.5 Conference Proceedings (refereed)**

1. Trotskovsky E., Sabag N. Engineering Student Solutions of Accuracy Problems: A Case Study, *2017 IACB, 2017 ICE & 2017 ICTE Proceedings*, Stockholm, Sweden. June 2017, pp. 156-1 – 156-8.
2. Trotskovsky E., Sabag N. Evaluation and Estimation in Engineering education: work in progress, *INTED - 10th annual International Technology, Education and Development Conference*, Valencia, Spain. March, 2016, pp. 8434-8437. DOI: 10.21125/inted.2015.0968
3. Sabag, N., Pundak, D. and Trotskovsky, E., Local online course versus MOOC – A Work in Progress, *INTED 2016 Proceeding, 10<sup>th</sup> International Technology, Education and Development Conference*, pp. 5559-5564, Valencia (Spain), 7 – 9 March, 2016. doi: 10.21125/inted.2016.0332
4. Trotskovsky, E. and Sabag, N., How Electrical Engineering Students Understand the Accuracy Concept Concerning Digitized Signals, *ICEE 2015, International Conference on Engineering Education*, pp. 156 – 161, Zagreb, 20 – 24 July, 2015.
5. Raveh, I., Trotskovsky, E. and Sabag, N., Mathematical vs. Engineering Understanding: Engineering Students' Perceptions (Work in Progress), *ICEE 2015, International Conference on Engineering Education*, pp. 518 – 522, Zagreb, 20 – 24 July, 2015.

6. Sabag, N. and Trotskovsky, E., Comparing Characteristics of final projects: BSc students vs. Practical Engineering students – the supervisors' point of view, *ICEE 2015, International Conference on Engineering Education*, pp. 685 – 690, Zagreb, 20 – 24 July, 2015.
7. Trotskovsky, E. and Sabag, N., Internship Project - Design in Industry vs. Research in Academia – A Case Study, *The 5<sup>th</sup> international conference on Education, Research & Development*, Elenite, 4 September – 9 September 2014.
8. Sabag, N. and Trotskovsky, E., Matching Instructional Strategies to Learning Styles: Does it Contribute to Students' Achievements?, *ICEE/ ICIT 2014, Joint International Conference on Engineering Education & International Conference on Information Technology*, pp. 134 – 142. Riga, 2 June – 6 June, 2014.
9. Trotskovsky, E. and Sabag, N., Students' Misconception of Accuracy, *ICEE/ ICIT 2014, Joint International Conference on Engineering Education & International Conference on Information Technology*, pp. 148 – 154. Riga, 2 June – 6 June, 2014.
10. Trotskovsky, E., Sabag, N., Waks, S., and Hazzan, O., Students' Misunderstandings in Project Design Activities in Electronics. *International Conference on Engineering Education and Research ICEER – 2013*, pp.1016-1023. Marrakesh, Morocco, July 2013.
11. Sabag N., Trotskovsky E., and Waks, S., Misconceptions in Electronics Design using Simulation. *International Conference on Engineering Education and Research ICEER– 2013*, pp. 945-952. Marrakesh, Morocco, July 2013.
12. Sabag, N. and Trotskovsky E., Using Lab Experiments in Electric Circuits to Promote Achievements in Mathematics. *Global Engineering Education Conference (EDUCON), 2013 IEEE*, pp. 123 – 129. Berlin, 2013.
13. Trotskovsky, E., Sabag, N., Waks, S., and Hazzan, O., Student Achievements in Solving Problems Using Models in Electronics. *International Conference on Engineering Education ICEE – 2012*, pp. 289 - 295. Turku, Finland, July - August, 2012.
14. Trotskovsky E. and Sabag N., Classification of Errors, Misunderstandings and Misconceptions of Students According to Engineering Thinking Categorization. *World Engineers' Convention*. Geneva, September 2011.
15. Sabag N. and Trotskovsky E., Students' Reflections on their Internship Design Project in Industry. *International Conference on Engineering Education ICEE – 2011*. Belfast, U.K., August, 2011.
16. Sabag N. and Trotskovsky E., Engineering Thinking: Characterization by Experts and its Appearance in Graduate Design Projects. *International Conference on Engineering Education ICEE – 2010*. Gliwice, Poland, August, 2010.
17. Trotskovsky E. and Sabag N., Internship in Engineering Design at Hi-Tech Industries: Theory and Practice. *IEEE-IBM TEE 2010 - Transforming Engineering Education conference*, pp. 6- 9 Dublin, Ireland, April 6-9, 2010.
18. Sabag, N., Trotskovsky, E., and Schechner, P., Internship as an Obligatory Requirement for the Degree of B.Sc. in Electronic and Electrical Engineering. *ITRE 4th International Conference on Information Technologies*, pp. 500-504. Tel-Aviv, Israel, 2006.

## **9.6 Books and Monographs**

### **9.7 Text books**

### **9.8 Edited Books**

### **9.9 Patents**

Bonn G., Levertov V., Valeev A., Chigvintsev S., Trotskovsky E., Zinov A., 1981. Signals Transmission and Receiving Device. Author certificate No. 985809. (In Russian).

### **9.10 Professional and Research Reports**

Valeev A., Chigvintsev S., and Trotskovsky E., 1982. Signals Transmission and Receiving Method. *Collected reports of Annual Conference, Ufa Oil Technical University, Ufa, Russia* (In Russian).

### **9.11 Other Publications**

1. Sabag N. and Trotskovsky E., Reflection in Engineering Design. *MoreTech. Journal of National Center of Technology teachers*. July 2010, pp. 9 – 20 (in Hebrew).
2. Sabag N. and Trotskovsky E., Internship in Electrical and Electronics Engineering. *MoreTech. Journal of National Center of Technology teachers*. 2009, pp. 14 – 18 (in Hebrew).