



SPECIALIZATION  
Lighting Engineering

Electrical Engineering  
Faculty of Control, Robotics & Electrical Engineering



## LIGHTING ENGINEERING



Supervisor:

**Ph.D. D.Sc. Eng. Krzysztof Wandachowicz**

E-mail: [krzysztof.wandachowicz@put.poznan.pl](mailto:krzysztof.wandachowicz@put.poznan.pl)

Phone: +48 61 665 23 97

Address: Poznan, 3A Piotrowo Street, room 808

More informations:

[www.iee.put.poznan.pl](http://www.iee.put.poznan.pl) (Institute of Electrical Engineering and Electronics)

[www.lumen.iee.put.poznan.pl](http://www.lumen.iee.put.poznan.pl) (Department of Lighting Engineering)

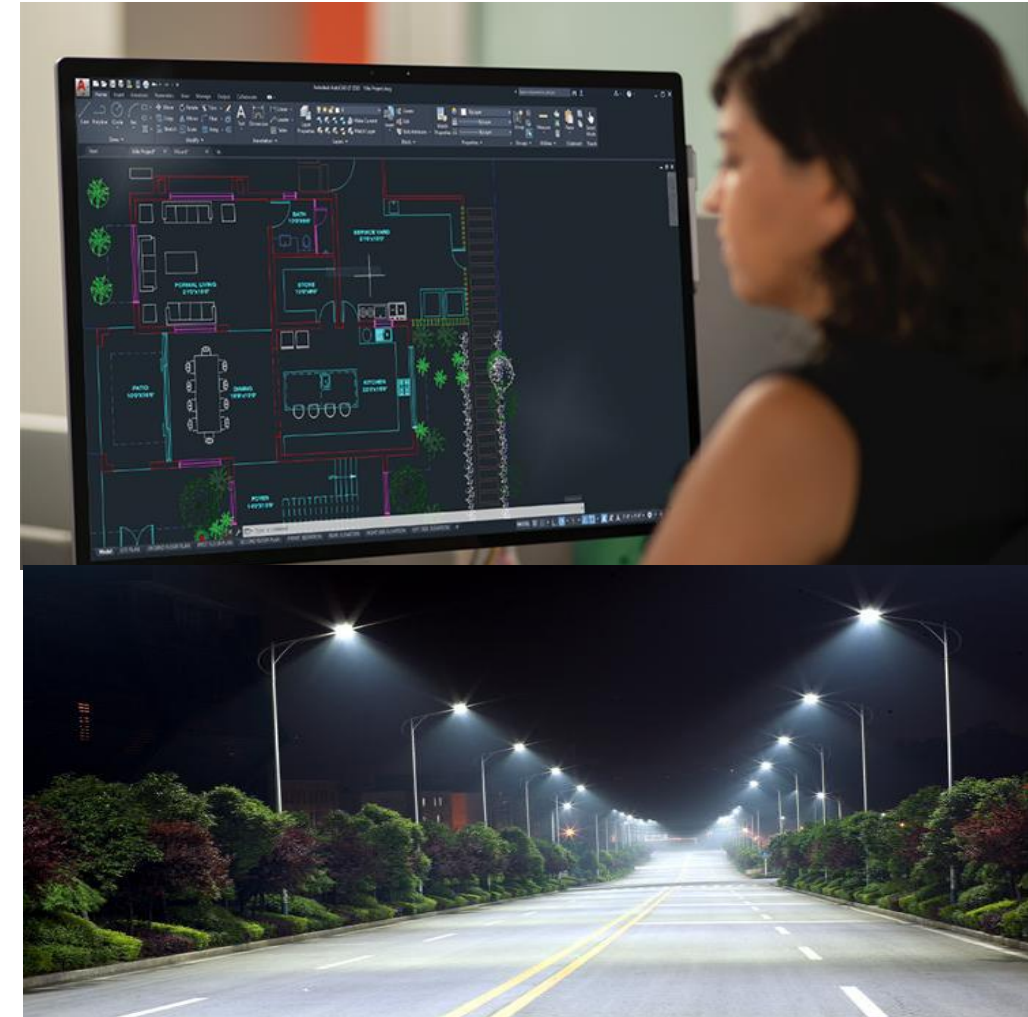
[www.facebook.com/TechnikaSwietlna](https://www.facebook.com/TechnikaSwietlna) (Department of Lighting Engineering)



See more at: [www.creef.put.poznan.pl](http://www.creef.put.poznan.pl)

### General information:

- Road lighting, lighting of pedestrian crossings, lighting of sports facilities, lighting of tunnels, lighting in museums, stage lighting, illumination of objects, light pollution, control systems in lighting installations.
- Current issues of lighting technology, including: WELL standard, calculation of melanopsin intensity in interiors (M-EDI), daylighting, new methods of assessment of discomfort glare, subjective tests of color rendering, assessment of the accuracy of computer programs, testing the visual efficiency of drivers using driving simulator, research on the impact of electronic advertising on the threat to road safety.
- Relux, DialLUX, AutoCAD, ReluxCAD.
- Introduction to 3DS Max (visualization of luminance distribution), creation of three-dimensional objects, import of lighting fixture files, visualization of objects and the space around them.
- Introduction to photogrammetry - creating 3D solids based on photographs of the object.
- Heat transfer modeling for 2D and 3D objects in QuickField and SolidWorks Simulation.
- Evaluation of the accuracy of computer programs for thermal calculations.
- Performance evaluation of Peltier and HeatPipes modules.



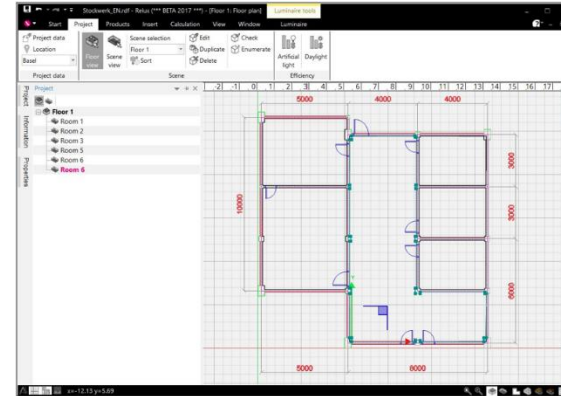
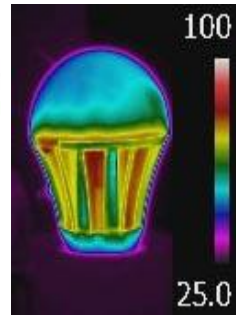
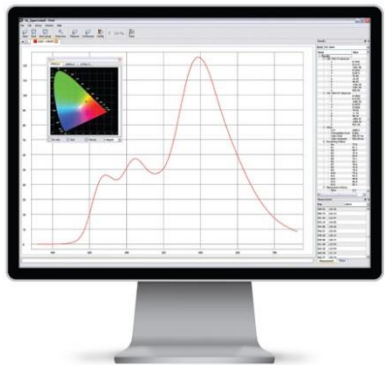
### Subjects:

#### Semester 1:

- Heat transfer modeling

#### Semester 2:

- Lighting equipment and control systems
- Light in architecture and outdoor space
- Diploma seminar



#### Semester 3:

- Lighting design and visualization computer process
- Current issues of lighting technology
- Diploma seminar
- Preparation of master's thesis





### Themes of diploma theses:

- Lighting design (indoors, outdoors, on roads)
- Measurements and assessment of the quality of workplace lighting
- Energy efficiency of lighting installations
- Computer aided design software
- Lighting control systems

- The use of optical radiation in photobiological processes
- Illumination of objects
- Thermal issues in lighting equipment
- Articles by lighting engineering students:

POZNAN UNIVERSITY OF TECHNOLOGY ACADEMIC JOURNALS  
No Electrical Engineering 2017

Przemysław SKRZYPCZAK\*  
Maria ZANDEK\*  
Krzysztof MACIOLEK\*

#### WYKORZYSTANIE POLARYZACJI ŚWIATŁA W CELU OGRANICZENIA OLIŚNIENIA W RUCHU DROGOWYM

Artykuł powstał na podstawie doświadczeń zdobytych podczas realizacji pracy inżynierskiej współautora artykułu. Opisuje ideę wykorzystania polaryzacji światła mijającego pojazdu w celu ograniczenia oślnienia wśród innych użytkowników ruchu drogowego. Zakreślono podstawy teoretyczne fizyki zjawiska polaryzacji, możliwości jej implementacji w układach rzeczywistych. Przedstawiono wykonane badania laboratoryjne ujęte w kontekście polaryzacyjnych, dokonano analizy uzyskanych wyników wraz z odniesieniem

#### Badanie światła do jazdy dziennej

Krzysztof Wandachowicz, Paweł Kołodziejcki, Krzysztof Szymczak

#### Streszczenie

W artykule przedstawiono wyniki badań trzech typów światła do jazdy dziennej, które można samodzielnie zamontować jako dodatkowe wyposażenie pojazdu. Do badań wybrano urządzenia dostępne na polskim rynku i różniące się znacznie ceną zakupu. Wykonano badania światłości zgodnie z wymaganiami Regulaminu nr 87 [2].

POZNAN UNIVERSITY OF TECHNOLOGY ACADEMIC JOURNALS  
No 83 Electrical Engineering 2015

Krzysztof WANDACHOWICZ\*  
Natalia MICHAŁOWSKA\*  
Michalina TAISNER\*

#### ZALETY STOSOWANIA DIOD ŚWIECĄCYCH W LAMPACH DO UŻYTKU DOMOWEGO ORAZ W OPRAWACH OŚWIETLENIOWYCH

#### Subiektywne badanie oddawania barw w lampach z diodami świecącymi

Michalina Taisner, Natalia Michałowska, Krzysztof Wandachowicz

#### Streszczenie

W artykule opisano wyniki badań laboratoryjnych, które polegały na obserwacji próbek barwnych oświetlanych lampami stosowanymi zazwyczaj we wnętrzach mieszkalnych oraz pomieszczeniach biurowych. Celem badań była subiektywna ocena oddawania barw lamp diodowych w porównaniu z oddawaniem barw występującym przy zastosowaniu żarówek i świetlówek. Wyniki badań przeprowadzone na grupie 10 obserwatorów porównano z wartościami wskaźników oddawania barw ocenianych lamp. Przedstawiono sposób projektowania stanowiska





## SPECIALIZATION Lighting Engineering

Electrical Engineering  
Faculty of Control, Robotics & Electrical Engineering

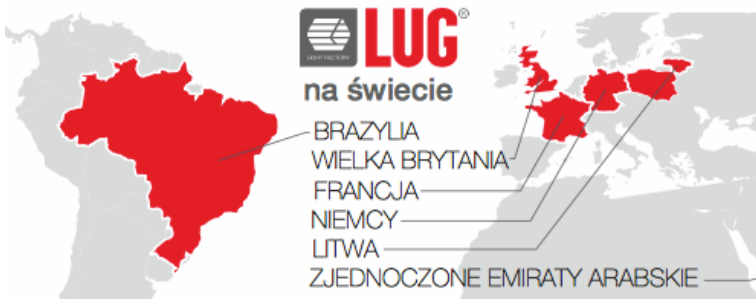


**PHILIPS**

**OSRAM**

**LENA**  
LIGHTING

**Schröder**



### Employment opportunity:

- Lighting equipment companies
- Lighting laboratories
- Design departments in companies producing and supplying lighting equipment
- Design offices, electrical installations
- Lighting departments in City Halls and Municipal Road Administrations
- Architectural offices

See more at: [www.creef.put.poznan.pl](http://www.creef.put.poznan.pl)



## SPECIALIZATION Lighting Engineering

Electrical Engineering  
Faculty of Control, Robotics & Electrical Engineering



### Additional information:

- Fully equipped laboratories for photometric, colorimetric and spectrophotometric tests.
- Ulbricht's spheres, spectroradiometers, imaging luminance meter, goniophotometers, stand for testing the visual efficiency of drivers in city traffic.
- Foton scientific circle - implementation of popular science and scientific projects in the field of lighting technology.
- Students develop scientific articles and give presentations at scientific conferences.  
<https://www.facebook.com/SKN.FOTON/>



### Project with Poznan University of Technology

The GL OPTICAM imaging luminance instrument development was completed in cooperation with Poznan University of Technology. It was implemented within the framework of the National Centre for Research and Development Programme. The aim of the project was to bring to the market a measuring system which supports on-site luminance distribution measurements. There are many luminance meters available on the market but they are all laboratory devices and none of them is actually designed and prepared for road luminance measurements.



## GL OPTICAM 3.0 TEC 4K

GL OPTICAM 3.0 TEC 4K Street luminance, pedestrian crossing zones, tunnel lighting and airfield lighting all can be measured in no time. This high resolution and sensitivity camera system is preconfigured for immediate luminance distribution measurements in any field application.

Unlike current laboratory meters, GL OPTICAM 3.0 TEC 4K is the world's first solution fully adapted to field measurements. Owing to the thermal stabilisation of the image sensor, measurement errors that result from the changing temperature conditions can be minimised. It is hermetic and ready to work in different weather conditions without fear of camera damage – even in the rain. In addition, it is equipped with a battery power source, thanks to which the operator is relieved in terms of power generators or portable power supplies. Moreover, a set of accessories makes it easy to determine the measurement field.

See more at: [www.creef.put.poznan.pl](http://www.creef.put.poznan.pl)



## SPECIALIZATION Lighting Engineering

Electrical Engineering  
Faculty of Control, Robotics & Electrical Engineering



### Attention!

**The choice of specialization takes place at the recruitment stage on the day of the qualifying exam.**

The candidate indicates a maximum of three specializations, with the first one being the highest preference and the third one being the lowest.

**Choosing your preferences does not mean being assigned to a selected specialization.**

The final allocation will be made not only on the basis of the preferences indicated by the candidate, but also taking into account the ranking list determined according to the result of the qualifying exam, the specializations opened and the numerosity of the created groups.

Not every specialization has to be opened, it depends on the number of students admitted to the studies. The condition for starting a specialization is that at least 15 students are assigned to it.

Lists of assignments to specializations will be available on the faculty website 3 days before the start of the first semester of studies.

See more at: [www.creef.put.poznan.pl](http://www.creef.put.poznan.pl)