Why it is worth to choose

the Faculty of Mathematics and Computer Science

at the University of Warmia and Mazury in Olsztyn, Poland?

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Study and ERASMUS+ mobility program

Contents

1 A short guide

1.1 City of Olsztyn

The city of Olsztyn is situated in the northern part of Poland in approximately equal distance of 200 km between the polish capital, Warsaw, and Gdańsk, a big Baltic port. It is

- a nice historical city with a castle in which the great Copernicus spent a lot of time and left scientific drawing on its walls
- a center of tourist region of Warmia and Mazury famous for its forests and lakes (11 of them are inside the city)
- a comfortable and safe city with excellent public transport, a lot of sport and recreation facilities, and relatively cheap accommodation (average monthly price is about 100 Euro for a room in a dormitory and 200 Euro for a cheapest apartment)

1.2 University of Warmia and Mazury in Olsztyn

University of Warmia and Mazury in Olsztyn was created in 1999 as a union of three academic institutions: Academy of Agriculture and Technics (found in 1950), Higher Pedagogical School (found in 1972) and Warmia Theological Institute (whose history goes back to the "Collegium Hosianum" theological seminary found in 1565).

Nowadays UWM is

- a dynamically developing modern university with 17 faculties
- an Alma Mater of about 23.000 students
- the place of the most beautiful and inspiring campus in Poland offering great facilities for every aspect of student life

1.3 The Faculty of Mathematics and Computer Science

The Faculty of Mathematics and Computer Science provides two-level mathematical education (3 years of Bachelor's degree programme and 2 years of Masters degree programme). We have near 900 students, 150 studied part-time, 22 Professors and 52 Doctors working on a position of Scientists and Academic Teachers.

We offer

- a stimulating learning environment provided by experienced international teaching stuff
- a possibility to be involved in a cutting-edge research across the broad spectrum of mathematics and its applications
- excellent facilities in the new (2012) building of the Faculty, benefits from the co-location with the Regional centre of Computer Sciences

2 More about the Faculty

2.1 Our offer

The Bachelor Studies (MATHEMATICS) in the following specializations:

- Financial and Actuarial Mathematics,
- Teaching Mathematics.

The Master Studies (MATHEMATICS) in the following specializations:

- Applied Mathematics,
- Teaching Mathematics.

A graduate of the Bachelor and Master Studies can take up a job as mathematician, physicist and computer scientist or, if one graduated the training course, as a teacher, also as a white collar in banks, insurances etc.

The Bachelor Studies (COMPUTER SCIENCE) of Engineering in the following specializations:

- General Information Sciences,
- Engineering of IT Systems.

A graduate of the Bachelor Studies of Engineering is skilled properly to use information devices as well as a great variety of programs. Thus, one can take up a job as computer scientist in information companies and telecommunications. A graduate has also an opportunity to continue studies on master level.

The Master Studies (COMPUTER SCIENCE) in the following specializations:

- Bioinformatics,
- Multimedia Techniques;
- Designing IT Systems and Computer Networks.

A graduate of the Master Studies is prepared to take up a job not only as a widely skilled computer scientist, but also as a white collar in banks, insurances and many others.

2.2 Selected subjects offered

Mathematics

Actuarial mathematics (4,5), Algebra (4), Complex analysis (4), Differential equations (4), Differential geometry (4), Discrete mathematics (4), Elements of mathematics of life insurance (4), Elements of risk theory (4), Estimation theory (4), Foundations of banking mathematics (5), Functional analysis (4), Game Theory (5), Geometry (4), Linear Algebra (4.5), Mathematical analysis (6), Mathematical logic (6), Mathematical modelling in finances (4.5), Mathematical statistics (6), Non Euclidean geometry (6), Numerical methods (5), Physics (6), Stochastic processes (4), Theoretical physics (4), Theoretical arithmetic (4), Topology (6) *(ECTS credits are indicated in parentheses).*

Computer Science

Application of computer tools in biology (3), Artificial intelligence (5), Advanced numerical methods (5), Algorithms and data structures (5), Big data analysis (4.5), Boolean algebra (4.5), Computer networks (5), Computer simulation (5), Computers organizations and architecture (3), Declarative programming - programming paradigms (5), Digital signal processing (4.5), Electronic measurements (5), Elements of robotics and automatics (4.5), Foundations of logic and set theory (5), Foundations of electronics and electrical engineering (5), Information theory and coding (5), Internet of things (5), Introduction to machine graphics (5), Introduction to programming (5), Image processing and recognition (4.5), Logic for informatics (4.5), Object oriented programming (6), Operating systems (4), Mobil systems (4.5), Modeling and visualization of 3D graphics (4.5), Multimedia data bases (4.5), Physics (6), Quantum algorithms (2.5), Security of computer systems (4.5), Sensors (5), Software engineering (5), Speech signal processing (5), Structural bioinformatics (5), Structured programming (6) *(ECTS credits are indicated in parentheses).*

2.3 Our major research areas

1. Algebraic Topology (M. Golasiński, Yu. Muranov, B. Hajduk, A. Tralle)
2. Differential Geometry and Topology (M. Bocheński, B. Hajduk, V. Shevchishin, A. Szczepkowska, A. Tralle, A. Woike)
3. Symplectic geometry and topology (B. Hajduk, V. Shevchishin, A. Tralle)
4. Dynamical Systems (A. Siemaszko)
5. Geometric Function Theory (B. Kowalczyk, A. Lecko, B. Uzar).
6. Geometry of Integrable Systems (A. Doliwa, A. Panasyuk, V. Shevchishin)
    - 2-dimensional geodesic flows with polynomial integrals (V. Shevchishin)
    - Discrete integrable systems (A. Doliwa)
    - Bihamiltonian structures and web geometry (A. Panasyuk)
7. Incidence Geometry and Algebraic Combinatorics (M. Kwiatkowski, A. Matraś, M. Pankov)
    - geometries over rings (E. Bartnicka, A. Matraś)
    - chain geometries and loops (J. Kosiorek, A. Matraś)
    - Grassmannians (M. Kwiatkowski, M. Pankov)
    - geometry of linear codes (M. Kwiatkowski, M. Pankov)
    - preserver problems in Quantum Logic (M. Pankov)
8. Elliptic Differential Equations (M. Bodzioch, M. Borsuk, J. Kluczenko, D. Wiśniewski, K. Żyjewski)
9. Mathematical Modelling of Biosystems (M. Bodzioch, M. Kolev, A. Siemaszko)
10. Fast computing based on CUDA technology (K. Sopyła)
11. Rough Mereology (L. Polkowski)
12. Intelligent Robotics (P. Artiemjew, Ł. Żmudziński)
13. Data Mining (P. Górecki, P. Drozda, B. Nowak, K. Ropiak, J. Szypulski)

2.4 Selected Researchers

Professor Piotr Artiemjew

Graduate of University of Warmia and Mazury in Olsztyn (2006), PhD in Technical Sciences of Information Technology in 2009 and habilitation in 2016 at the Polish Japanese Institute of Information Technology in Warsaw. His specialisation is decision systems. He is a Lecturer and Researcher in the Department of Mathematics and Computer Sciences at the University of Warmia and Mazury in Olsztyn. His research interests include artificial intelligence, data mining, machine learning, rough sets, and robotics. His interests are the science-fiction literature, martial arts and philosophy.

Professor Adam Doliwa

Born 1965, mathematical physicist; research interests: algebraic and geometric aspects of exactly solvable models in classical and quantum physics, integrable difference equations; list of publications: http://wmii.uwm.edu.pl/∼doliwa/PublAD.html

Professor Marek Golasiński

Habilitation: Algebraic Models of Disconnected Equivariant Spaces, Faculty of Mathematics and Computer Science, Toruń (2004);
Full professor: 2013;

Books: editor: Banach Center Publications, vol. 85 (Warsaw, 2009); co-author: Gottlieb and Whitehead Center Groups of Spheres, Projective and Moore Spaces (Springer, 2014)
Main Reserach Areas (past and present): categorical methods in the homotopy theory, equivariant rational homotopy theory, space forms and their homotopy types, polynomial and regular maps, Gottlieb groups and their applications, residue class rings of analytic and entire functions. The author or co-author over 80 research papers published in valuable mathematical journals;

Erds number: 2;
Supervisor: 5 Ph.D. students;
Visiting Professor: Dartmouth College, Hanover (USA); Instituto de Matematicas, Unidad Oaxaca (Meksyk); Korean University, Seoul (Korea); Kyoto University (Japan); Moscow University (MGU, Russia); Malaga University (Spain); So Paulo University (Brazil);
Close scientific cooperations: Universidade de So Paulo, Universidade de Rio Claro (Brazil) and Universidad de Mlaga, Campus Universitario de Teatinos, Mlaga (Spain) , Moscow University (MGU, Russia).

Professor Witold Łukaszewicz

Received his Master of Science degree from Warsaw University with a major in computer science in 1970. He received both Doctor of Philosophy degree (with the title Theorem proving in temporal logics) and habilitation (theoretical foundations of computer science/ non-monotonic reasoning) from Warsaw University in 1979 and 1989, respectively. He became a titular professor in 2005.

His research interest is concerned with Theoretical Artificial Intelligence. More specifically, most of his papers are related to Non-monotonic Reasoning - a part of Knowledge Representation. He is the author of the book Non-Monotonic Reasoning: Formalization of Commonsense Reasoning, Ellis Horwood, 1990, which was the first monograph devoted to this area.

Witold Łukaszewicz wrote 60 papers published in Scientific Journals and Proceedings of international conferences. He was a member of program committees of many conferences, including the leading AI conferences such as IJCAI, KR and ECAI. He is a member of program committee of Journal of Non-classical Logics.

In 1970 Witold Łukaszewicz started working at Department of Mathematics, Informatics and Mechanics of Warsaw University. He worked there till 2003. Paralelly, between 1989 and 2004 he spent three months a year in Department of Computer Science in Linkoping University in Sweden as a visiting professor. In 2003 he started working in College of Informatics and Economy in Olsztyn as a Chancellor. From 2007 Witold Łukaszewicz works in Department of Matematics and Computer Science in Warmia and Mazury Uniwersity in Olsztyn. He is the head of Chair of Computer Science and Operational Research.

Professor Mark Pankov

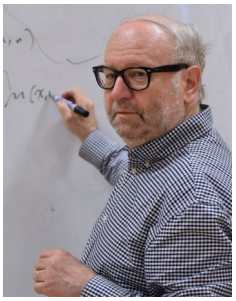
Mark Pankov received both PhD and Doctor of Sciences degrees at Institute of Mathematics NASU (Kiev) in 1999 and 2009, respectively. In 2011, Institute of Mathematics PAN (Warsaw) has recognized the second degree as habilitation. His research interests include but not limited to Buildings and Grassmannians, Coxeter groups, Linear Codes, the standard Quantum Logic and related Grassmannians. In general, he is interested in any combinatorics which has applications in different areas of mathematics and other sciences.

Mark Pankov is a single author of two monographs "Grassmannians of classical buildings" (World Scientific 2010) and "Geometry of semilinear embeddings:Relations to graphs and codes"(World Scientific 2015). Also, he has published about 50-y research articles in high quality mathematical journals including Journal of Algebraic Combinatorics, Journal of Combinatorial Theory (Series A), Finite Fields and Their Applications. His collaborators are Michel Marie Deza (Ecole Normale Superieure de Paris, https://en.wikipedia.org/wiki/Michel_Deza) and Hans Havlicek (Technische Universitat Wien). See http://wmii.uwm.edu.pl/∼pankov/ for more information.

Mark Pankov attaches great importance to the individual work with interested students and their involvement in current researches, as a result some solid joint articles were published.

Professor Lech Polkowski

Graduate of Warsaw University of Technology (1969) and Warsaw University (1978), PhD in Theoretical Mathematics (topology) in 1982, habilitation in 1994 (mathematical foundations of computer science/theory of rough sets), professor titular in 2000. Was a doctoral student in the Institute of Physical Chemistry of the Polish Academy of Sciences (1970-73), assistant in the Institute of Mathematics, Warsaw University of Technology (1973-1982), assistant professor there (1982-2002). From 1994 a professor in the Polish-Japanese IT



Academy in Warsaw and parallelly a professor at the Department of Mathematics and Computer Science of the University of Warmia and Mazury in Olsztyn, Poland. Currently he is the head of the Chair of Mathematical Methods in Computer Science at the University of Warmia and Mazury and the head of the Chair of Intelligent Algorithmics and Behavioral Robotics at the Polish-Japanese IT Academy.

He was a visiting professor at the Department of Mathematics of Ohio University, Athens, Ohio, USa (1985-87, 1990-91) and visiting scholar at the Delftse Universiteit at Delft (the Netherlands)

His scientifc interests were concerned with topology where he had results in general topology ('On two theorems of Norman Noble' quoted in Engelking 'General Topology') and topological dimension theory ('On weakly infinitely-dimensional spaces' quoted in Engelking Dimension Theory) and works published in Proc. Amer. Math. Soc., Topology Proceedings, Fundamenta Mathematicae and Colloquium Mathematicum. He published papers in formal language theory concerned with the anaphora resolution problem, Montague grammars (published as proceedings of the Delft University, available in the Koninglijke Biblioteek, Den Haag and in Int. J. Computer Math.). His main research interests concern the approximate reasoning methodologies in Computer Science, notably the rough set theory, where he constructed the topological theory of spaces of rough sets (in some works published in Bull. Acad.Sci.Polon.), a theory of approximate mereology and a theory of multi-agent fusion of knowledge. He applied the notions of approximate mereology to the theory of granulation of knowledge and to behavioral robotics by constructing a theory of control for formation of robots/intelliegent agents (implemented by P. Osmialowski).

He proposed to apply approximate mereology via granulation theory to synthesis of a new kind of classifiers based on factorization of granulated decision systems. He combined in joint works with Andrzej Skowron and Gheorghe Paun rough set methods with formal grammars theory to build a theory of approximate grammar synthesis.

He has about 250 papers in his research achievements, including 3 monographs (in Springer Vlg.), 5 co-edited monographs, in addition to about 60 conference proceedings and about 40 participations in Program Committees and Advisory Boards.

He published with Zdzisław Pawlak, the founder of rough set theory, Andrzej Skowron of Warsaw University, Jan Komorowski, the bioinformatics professor at Uppsala University, Gheorghe Paun, member of the Romanian Academy, Piotr Artiemjew of Warmia and Mazury University. He coedited monographs with Sankar Kumar PAl, the Director of the Indian Statistical Institute, TY Lin of San Jose University, Shusaku Tsumoto of Matsue University. His number is two with Solomon Marcus, the world renowned mathematician and linguist of Romanian Academy and with Grzegorz Rozenberg of Leiden Universiteit and Univ. Colorado at Boulder, USA.

He was the member of Editorial Board for Grammmars (Kluwer) and for 16 years Deputy Editor in Chief of Fundamenta Informaticae. Currently he is a member of Advisory Board of Paladyn.International Journal of Behavioral Robotics and a member of Editorial Boards of Transactions on Rough Sets (a subseries of Lecture Notes in Computer Sciences of Springer) and JAMRIS (Journal of Automation, Mobile Robotics and Intelligent Systems, edited by PIAP (the Industrial

Institute of Process Automatization).

He is an IRSS Fellow (IRSS is Int. Rough Set Society).

His interests are literature especially in English language and classical Polish (XIX and first half of XX centuries), classical music, classical films and folk music of mid-XX century).

Professor Aleksy Tralle

Born in 1958, Ph. D. in Mathematics obtained from Belarusian University in Minsk, habilitation from Wrocław University in 1992, Professor title in 2002. Main research interests: differential geometry, Lie groups and their discrete subgroups, symplectic and contact geometry. He is an author

of the research monograph *Symplectic manifolds with no Kaehler structure*, Springer, Berlin, 1997 (together with John Oprea) and over 60 research articles.

Selected publications:

- *On Thom spaces, Massey products and non-formal symplectic manifolds*, Internat. Math. Research Notices, 10(2000), 495-513 (with Y. Rudyak)
- *On symplectically harmonic cohomology of six-dimensional nilmanifolds*, Commentarii Mathematici Helvetici 76(2001), 89-109 (with R. Ibáñez, Y. Rudyak and L. Ugarte)
- *On certain geometric and homotopy properties of closed symplectic manifolds*, Topology and its Applications 127(2003), 33-45 (with R. Ibáñez, Y. Rudyak and L. Ugarte)
- *Fundamental groups of symplectically aspherical manifolds*, Mathematische Zeitschrift 248(2004), 805-826 (with J. Kędra and Y. Rudyak)
- *Fundamental groups of symplectically aspherical manifolds II*, Mathematische Zeitschrift 256(2007), 825-835 (with J. Kędra and Y. Rudyak)
- *On non-degenerate coupling forms,* J. Geom. Physics 61 (2011), 462-475 (with J. Kędra and A. Woike)
- *On the algebraic independence of hamiltonian characteristic classes*,J. Symplectic Geometry 9(2001), 1-9 (with Ś. Gal and J. Kędra)
- *Simply connected K-contact and Sasakian manifolds in dimension 7*, Mathematische Zeitschrift 281(2015), 457-470 (with V. Muñoz)
- *Clifford-Klein forms and a-hyperbolic rank*, Internat. Math. Research Notices 15(2015), 6267-6285 (with M. Bocheński)
- *On formality of Sasakian manifolds*, Journal of Topology 9(2016), 161-180 (with I. Biswas, M. Fernández and V. Muñoz)
- *On solvable compact Clifford-Klein forms*, Proceedings of the American Mathematical Society 145(2017), 1819-1832 (with M. Bocheński)

Professor Tralle was a supervisor of 6 Ph. D. dissertations, all his former Ph. D. students have been staying in the academic world, J. Kędra has been currently promoted to the rank of Full Professor at the University of Aberdeen. Professor Tralle was awarded by the Polish Academy of Science, by the Minister of Science and Higher Education, by the Minister of National Education and by the Mayor of Olsztyn.

Professor Vsevolod Shevchishin

Born in 1965, he recieved his PhD degree and habilitation at the Ruhr-University, Bochum, Germany. During his scientific career he worked in Ukraine, Germany, Russia, and now Poland. He can speak several languages: Polish, English, German, Russian.

Reseach interests: Symplectic geometry and topology, low-dimensional topology, complex analysis and Kähler geometry, combinatorial group theory, dynamical systems and its integrability.

Professor Artur Siemaszko

Born in 1965 in Olsztyn. Received his Master of Science (1990) and Doctor of Philosophy (1997) degrees from Faculty of Mathematics of Nicolaus Copernicus University in Toruń and habilitation (2013) from Institute of Mathematics of Technical University in Wrocław. His research interest is focused mainly on ergodic theory and topological dynamics. But he also published articles on geometry and mathematical modeling in medicine.

CV with list of publications:
http://wmii.uwm.edu.pl/∼kairr/pl/o-nas/artur-siemaszko

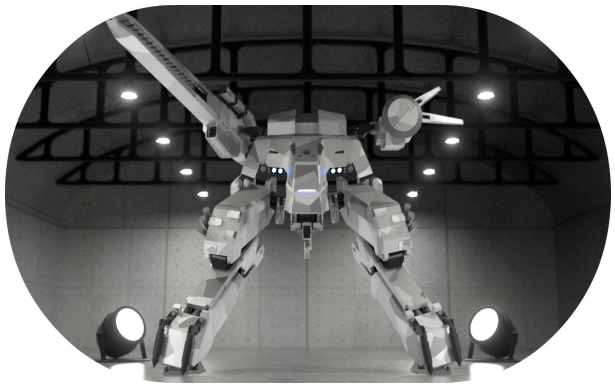
2.5 Laboratories

Laboratory of multimedia and computer graphics

The greenscreen

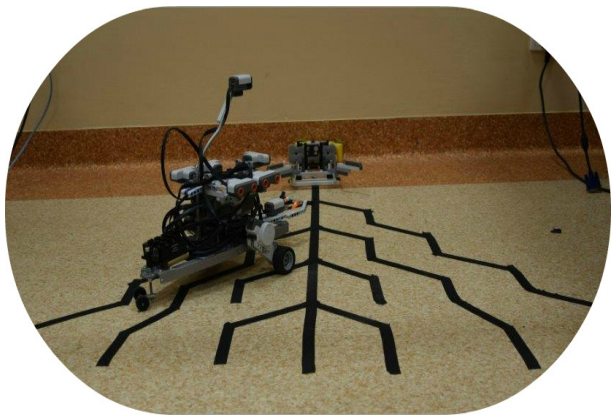
Blender artwork by Joanna Ostrowska

Blender artwork by Szymon Igras



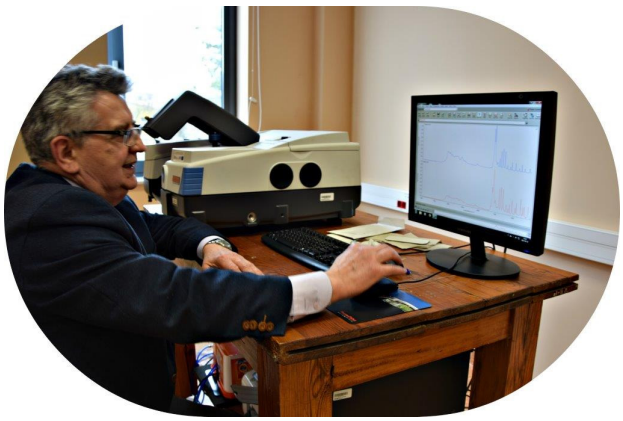
Blender artwork by Paweł Majewski

Laboratory of intelligent robotics http://www.uwm.edu.pl/nkr/en/short-about-nkr/



Laboratory of molecular physics - brick D

Atomic force Microscopy (AFM) - vision of the surface in the nano scale



Spectrometer FTIR (Fourier Transform Infra-Red) - observation of infrared spectra of particles

Laboratory of molecular physics - brick E

Spectrometer photoacustic with laser and OPO

Spectrometer NMR with electromagnes 3 T (Tesle)

2.6 Selected graduates

Monika Trawińska - Graduated from Mathematics. She is a teacher of Mathematics in Gimnazjum Nr 23 in Olsztyn and admires her work.

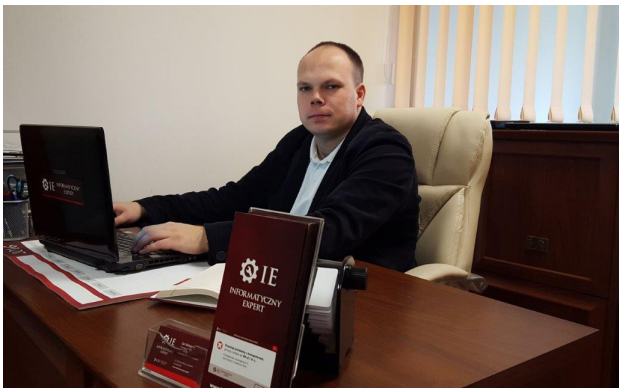
Michał Korpusik - Vice President, Barclays Africa Group. Graduated from Mathematics and Computer Science. Presently works in Barclays Bank in Prague. He is a member of the team creating the IT systems for credit risk management in Africa.

Jagoda Soszyńska - graduated from Computer Science, she is a designer in the gaming industry.

Rafał Wiktorzak - graduated from Applied Mathematics, he is the Junior Product Controller of The Royal Bank of Scotland, Warsaw.

Aleksandra Stępska - graduated from Computer Science - she works as a tester of software for management system of the biggest scandinavian bank Nordea.

Jan Bielaszka - graduated from Mathematics and Computer Science, since 2016 he is the president of Ekspert Sp. z o. o. company; member of the board of directors of Great Trade Solutions S.A. company.



3 Some keynote information

3.1 Cost of study and accommodation

Our one year fee for the regular studies (not concerning the Erasmus+ program!) is around 1000 Euro. This amount can be substantially reduced for best students. Average monthly price is about 100 Euro for a room in a dormitory and 200 Euro for a cheapest apartment.

3.2 General rules and other practical information for Erasmus+ mobility program

See http://www.uwm.edu.pl/bwz/en/

3.3 Erasmus Coordinator

Prof. Andriy Panasyuk

Prof. Andriy Panasyuk - Born in 1963 in Lviv, Ukraine. Undergraduate and postgraduate studies, Assistant Professor position (1991–1995): Ivan Franko National Lviv University; Assistant Professor at the Department of Mathematical Methods in Physics, University of Warsaw (1991-2010); from 2010 Associate Professor at Warmia and Mazury University at Olsztyn. Main research interests: differential geometry, integrable systems, mathematical physics.

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