

### Detailed plan of the conferences:

**June 29, 2016**

8:00 - 9:30 Registration of participants of the conference (hall, 1st floor, Podchorążych 2)

**9:30 - 10:00 The opening ceremony of the conference - Welcome the participants of the conference by the Rector of the university and Authorities of faculty (room Danka 1st floor)**

10:00 – 12:00 Plenary lectures in English language (room Danka 1<sup>st</sup> floor) – chairman *Prof. Hana Čtrnáctová*

*Prof. Liberato Cardellini - Successful Programs of Professional Development for Teachers*

*Dr. John Oversby - Case studies of Think Aloud Research in Science Education*

12:00 – 13:00 Lunch break (Restaurant 'Eden' Bydgoska 19A)

13:00 – 15:00 Parallel session

didactics of chemistry – chairman <i>Prof. Vincentas Lamanaukas</i> (in English language – room Danka)	didactics of science – chairman <i>Prof. Hanna Gulińska</i> (in Slavic languages - Aula)
1. <i>Prof. Hana Čtrnáctová, Dr. Eva Stratilová Urválková, Dr. Petr Šmejkal &amp; Dr. Milada Teplá - Chemical activities for IBSE</i>	1. <i>Dr. Anna Florek - Personalizacja w edukacji - od koncepcji edukacyjnej po pracę z uczniami</i>
2. <i>Prof. Andrzej Barański - Bridging a gap between microscopic and macroscopic definition of the mole</i>	2. <i>Dr. Piotr Bieniek - Na granicy chemii i sztuki - kryształy w świetle spolaryzowanym</i>
3. <i>Prof. Wilmo Francisco Junior &amp; Prof. Francisco Welington - Investigative cases for the construction of chemical knowledge</i>	3. <i>Dr. Małgorzata Krzeczowska, MSc. Emilia Grygo-Szymanko, MSc. Paweł Świt &amp; MSc. Patryk Własiuk - What and why – non-formal education of children in Poland – possibilities and experiences</i>
4. <i>Prof. Tatjana Resnik &amp; Prof. Danuta Piróg - Natural Sciences Teaching in Polish and Slovenian schools – a comparative assessment</i>	4. <i>MSc. Wioleta Kopek-Putała - Wykorzystanie „entertainment-education” w nauczaniu chemii, z uwzględnieniem uczniów ze specjalnymi potrzebami edukacyjnymi</i>
5. <i>Prof. Ryszard M. Janiuk - Chemistry students' perceptions of the teaching profession</i>	5. <i>MSc. Petra Králiková - Topologická štruktúra slovenských učebníc fyziky</i>
6. <i>Prof. Martin Bilek &amp; Dr. Veronika Machková - Inquiry Based Science Education as Teaching and Learning Culture or Climate</i>	6. <i>MSc. Simona Dudáková - Testovanie riešení úloh s okamžitou spätnou väzbou</i>
7. <i>Prof. Giliberti Marco - “Light Mystery”: a play about physics IBSE</i>	7. <i>MSc. Agata Aszklar - Dialogiczny obraz przyrody widziany oczyma dziecka</i>

15:00 – 15:30 Coffee Break (hall)

15:30 – 18:00 Parallel session (in English language – room Danka / Slavic languages - Aula)

<b>didactics of nature &amp; biology</b> – chairman <i>Prof. Jarmila Kmeťová</i> (in English language – room Danka)	<b>didactics of chemistry</b> – chairman <i>Prof. Ryszard M. Janiuk</i> (in English language - Aula)
<ol style="list-style-type: none"><li>1. <i>Prof. Martin Bilek, Dr. Veronika Machková, Dr. Michal Musilek &amp; prof. Ivana Šimonová - Project Mascil - The Challenge for Improvement of Science Education</i></li><li>2. <i>Prof. Małgorzata Nodzyńska - How to show water in the micro-world level?</i></li><li>3. <i>Dr. Paweł Cieśla - Outdoor Education</i></li><li>4. <i>Dr. Gayane Nersisyan &amp; Dr. Maryam Grigoryan - Implementation of a sustainable development program as an ecological</i></li><li>5. <i>Dr. Petr Šmejkal, Prof. Marek Skoršepa &amp; Dr. Eva Stratilová Urválková - Self-reported Czech and Slovak students' feedback on performing activities in computer based science lab</i></li><li>6. <i>MSc Joanna Lilpop, Dr. Marcin Chrzanowski &amp; Dr. Maria Zachwatowicz - Polish Biology Olympiad: analysis of the students' research projects in the context of the scientific method competence and the selection of research topics</i></li><li>7. <i>MSc. Beata Gawrońska &amp; Dr. Marcin Chrzanowski - Health awareness in the primary school coursebooks at science</i></li></ol>	<ol style="list-style-type: none"><li>1. <i>Dr. Małgorzata Krzeczowska, Dr. Iwona Maciejowska &amp; Dr. Ewa Odrowąż - Elements of the IBSE methodology in the Irresistible project – the experience of Polish teachers participating in the project</i></li><li>2. <i>Dr. Paweł Bernard - Influence of RRI classes on image of a scientist in students' minds</i></li><li>3. <i>MSc. Ewelina Kobylańska - Amuzing chemistry</i></li><li>4. <i>MSc. Luděk Mika &amp; Dr. Petr Šmejkal – Fun 3D printed VSEPR models and 3D periodic tables for chemistry education</i></li><li>5. <i>MSc. Anna Michniewska – Using Learning Apps in chemistry education in secondary school.</i></li><li>6. <i>MSc. Jan Tríska &amp; Prof. Hana Čtrnáctová - Indicators of education results in teaching chemistry</i></li><li>7. <i>BSc. Michal Kasza - Portable laboratories in chemistry education</i></li></ol>

19:00 - 21:00 Visit the museum and workshop of stained glass (aleja Zygmunta Krasińskiego 23; <http://muzeumwitrazu.pl/>)

**30 June 2016**

8:30 – 9:30 Plenary lecture in English language (room Danka 1st floor) – chairman *Prof. Liberato Cardellini*

*Prof. Andrej Šorgo & Prof. Šumak Boštjan - There an Back Again – Adoption and Abandonment of Information and Communication Technologies in Science Education*

9:30 – 10:00 Coffee Break (hall)

10:00 – 12:00 Parallel session (in English language – room Danka / Slavic languages - Aula)

<b>didactics of physics</b> – chairman <i>Prof. Grzegorz Karwasz</i> (in English language – room Danka)	<b>didactics of chemistry</b> – chairman <i>Prof. Martin Bilek</i> (in Slavic languages - Aula)
<ol style="list-style-type: none"><li>1. <i>Prof. Libor Koniček - Waves as theme for pupil's investigation</i></li><li>2. <i>Prof. Louis Trudel &amp; Prof. Abdeljalil Métioui - Preservice teachers' understanding of the concept of relative speed using a video-based laboratory in physics education</i></li><li>3. <i>Prof. Vincentas Lamanauskas &amp; Prof. Augienė Dalia - Scientific Research Activity of Students Pre-Service Teachers of Social Sciences at University: Aspects of Understanding, Interest, Promoting and Limiting Factors</i></li><li>4. <i>MSc. Monika Hanáková - Analysis of scoring schemes in PhO</i></li><li>5. <i>MSc. Daniel Dziob - Assessment Of Student Achievements With Use Of A Group Board Game</i></li><li>6. <i>MSc. Ivana Skorecova - How readability depends on the frequency of letters</i></li><li>7. <i>Slavko Buček - Numerical simulations of inclined throw with regard the air resistance</i></li></ol>	<ol style="list-style-type: none"><li>1. <i>Prof. Hanna Gulińska - Digital Teacher</i></li><li>2. <i>Prof. Miroslav Prokša &amp; MSc. Renáta Michalisková - Zvládnutie konceptu rýchlost' chemických reakcií po bakalárskom stupni prípravy budúcimi učiteľmi na PriF UK v Bratislave</i></li><li>3. <i>Prof. Małgorzata Nodzyńska, Dr. Paweł Cieśla - Duch chemii w podręczniku szkolnym</i></li><li>4. <i>Prof. Lubomir Held - Avogadro's hypothesis as a critical moment in inductive approach how to build a concept of particle composition of gases</i></li><li>5. <i>Prof. Axiniya Egorova - Experience and prospects of training for teachers of chemistry in conditions of introduction of new educational standards in a classic universitete</i></li><li>6. <i>Dr. Czesław Puchała - Edukacyjne wykorzystanie 'Zielonej chemii' a społeczny odbiór chemii</i></li><li>7. <i>Dr. Ewa Odrowąż &amp; Dr. Iwona Maciejowska - Kształcenie przyszłych nauczycieli – teoria a praktyka</i></li></ol>

12:00 – 13:00 Lunch break (Restaurant 'Eden' Bydgoska 19A)

**13:00 – 13:15 The opening ceremony of the conference “XX” - Welcome the participants of the conference by the Rector of the university and Authorities of faculty (Aula)**

13:15 – 13:30 Plenary oral presentation in English language

*Prof. Liberato Cardellini & Prof. Ferretti Marco Peter - A Crime Scene Investigation to Promote "Education through Science" in an Italian High School*

13:30 – 15:00 Parallel session

<b>didactics of science</b> – chairman <i>Prof. Marek Skorsepa</i> (in English language – room Danka)	Plenary lectures: – chairman <i>Prof. Alicja Walosik</i> (in Slavic languages - Aula)
<ol style="list-style-type: none"> <li>1. <i>Prof. Vincentas Lamanuskas - Scientific Research Activity Of Students Pre-Service Teachers Of Social Sciences At University</i></li> <li>2. <i>Dr. Petra Konečná &amp; Dr. Věra Ferdiánová - The Choice's Preference of Mathematical Problems of Secondary School's Students</i></li> <li>3. <i>Dr. Paweł Cieśla, Prof. Małgorzata Nodzyńska - ICT in science education</i></li> <li>4. <i>Dr. Meryem nur Aydede Yalçin - How self-direct learners learn science</i></li> <li>5. <i>Dr. Martin Rusek - Innovation in Science Education: Proposal of Research Methods</i></li> <li>6. <i>BSc. Linda Honskusová, BSc Daniel Pražák &amp; Dr. Martin Rusek - Grade 9 Students' Conception of Chemistry</i></li> </ol>	<p><i>Prof. Ilona Žeber-Dzikowska - Edukacja biologiczna warunkiem wdrażania zasad zrównoważonego rozwoju</i></p> <p><i>Prof. Danuta Piróg &amp; Prof. Wiktor Osuch - Zmiany w polskim szkolnictwie a profil zawodowo-demograficzny nauczycieli zdobywających kwalifikacje do nauczania przyrody na Uniwersytecie Pedagogicznym w latach 2000-2016</i></p>

15:00 – 16:00 Poster session with coffee (Aula) (Poster should be prepared in portrait orientation of the paper. Poster size – preferred B1, A0 acceptable)

1.	Prof.	Ali Baykal	What do science and math teachers think about how they think?
2.	Prof.	Jarmila Kmeťová	Inorganic Chemistry in the Slovak secondary schools curriculum
3.	Prof.	Karel Kolář	Macrocyclic compounds and teaching of chemistry
4.	Prof. Msc. Prof. Dr.	Karel Kolář Natálie Karásková Naděžda Vladislavovna Malcevskaja Myška Karel	Microwave assisted solvent free synthesis of benzamides as school experiment - effect of substituent in benzoic acid.
5.	Prof.	Libor Koniček	Equipment for measurement of space characteristics of light sources
6.	Prof.	Vincentas Lamanaukas	Natural Science and Mathematics Teachers Collaboration: The Tangible Results of the International Project "MaT2SMc"
7.	Prof.	Małgorzata Nodzyńska	Students' questions
8.	Prof. MSc.	Henryk Noga Piotr Migo	Awareness of ethical behaviors related to the functioning of the Internet, in the teachers opinion
9.	Prof. Dr.	Marek Skorsepa Petr Šmejkal	Factor structure of Intrinsic Motivation Inventory in computer based science lab
10.	Prof. Prof.	Louis Trudel Abdeljalil Métioui	Impact of an experiential approach upon the development of science teaching skills within student teachers in Francophone Minority Communities
11.	Prof. Dr.	Krzysztof Wojciechowski Krystyna Wojciechowska	Education chemistry students UPH in Siedlce in the course of nuclear chemistry and its impact on their attitudes toward nuclear power
12.	Prof.	Robert Zakrzewski	The competences of chemistry students in the area of external examinations
13.	Dr.	Zuzana Balazsiova	Knowledge on health protection the use ICT - a condition of the students' motivation and optimization of physical curriculum
14.	Dr. Dr.	Marcin Chrzanowski Maria Zachwatowicz	Portrait of a good teacher
15.	Dr. Dr.	Marcin Chrzanowski Szymon Żuchowski Barbara Ostrowska	Vernacular misconceptions - types, causes, remedies
16.	Dr. Dr. Dr. Msc. Dr.	Marcin Chrzanowski Małgorzata Musialik Bożena Karawajczyk Irmina Buczek Barbara Ostrowska	Sustainable development in chemistry textbooks at ISCED3 level
17.	Dr.	Stefania Elbanowska-Ciemuchowska	Science at elementary teaching level
18.	Dr. Dr.	Stefania Elbanowska-Ciemuchowska Michał Bednarek	Science subjects in young people's choices
19.	Dr. Dr.	Elena Ferencova Eva Kráľová	Didaktické a etické aspekty dodržiavania fyzikálnych princípov vo výučbe lekárskej fyziky a biofyziky na lekárskech fakultách
20.	Dr.	Agnieszka Kamińska-Ostęp	Wpływ nauczyciela na stosunek uczniów do uczenia się chemii w opinii gimnazjalistów
21.	Dr.	Eva Kralova	Motivation of medical students for better understanding of fundamental sciences applications in medicine.

22.	Dr. MSc.	Małgorzata Krzeczowska Barbara Krajewska	Teaching secondary school students how to derive information from the reference literature chemistry materials
23.	Dr. Ing. MSc.	Mária Linkešová Ivona Paveleková Róbert Knap	Functional Technologic Models Of Historical Processing Devices And Their Didactic Use 3. Production of sugar
24.	Dr. Dr. Dr.	Veronika Machková Michaela Křížová- Barbora Uždilová	Small Experimental Projects in Professional Future Science Teachers Development or Let's Use Our Heads to Play
25.	Dr.	Michal Musilek	Aerial photography and monitoring the forest and its health condition using multicopters
26.	Dr.	Valentin Oshchapovsky	Strengthening of the Integrative Interdependence of Sciences as a Method to Improve Education Level
27.	Dr.	Valentin Oshchapovsky	About of the Crisis of Education in the World
28.	Dr. Dr.	Czesław Puchala Zygmunt Olesik	Możliwości przygotowania doktorantów do prowadzenia zajęć dydaktycznych z zakresu chemii i fizyki
29.	Dr. Prof.	Sandra Rudolph Martin Lindne	SciVis - Making Science Visible
30.	Dr. Msc. Msc.	Martin Rusek, Dagmar Stárková, Iva Metelková	International Project SciVis – Outcomes of the Czech Team
31.	Dr. MSc. MSc Ing.	Petr Šmejkal Kateřina Freyerová Zuzana Miková Veronika Sutrová Michaela Šmejkalová	Science summer camps for children - how we do. And how should we do?
32.	Dr.	Zuzana Vaclavikova	Study modules in non-formal education
33.	Dr.	Maria Zachwatowicz,	Field-based research projects in the Polish Biology Olympiad
34.	Dr.	Marcin Chrzanowski	
35.	Msc.	Joanna Lilpop	
36.	MSc.	Michael Berning	Land YOUs - an Online game for sustainable education
37.	MSc. Prof.	Matúš Ivan Renata Šulcová	Educational means for simultaneous development of chemical and mathematical thinking
38.	MSc	Lorena Kelo Marie Dede Esmeralda Guliqani Marko Sotiraq	Problem-solving scheme a key step in conceptual physics learning
39.	MSc.	Ewelina Kobylańska	Poduszki chemiczne
40.	MSc. Dr.	Luděk Mika Petr Šmejkal	3D printed poster
41.	MSc. Dr.	Monika Šindelková Irena Plucková	The most Common Misconceptions of Primary School Students Associated with Oxygen

42.	BSc. Dr. Martin Rusek, Msc. Dagmar Stárková	Karel Vojtř	<i>A Model of Problem Tasks in Chemistry for Educational Standards Validation</i>
43.		Slavko Buček	<i>Numerical study of hysteresis loop</i>
44.		Slavko Buček	<i>Numerical simulations of inclined throw with regard the air resistance</i>

16:00 – 18:00 Parallel session

<b>information technologies in education</b> – chairman <i>Prof. Andrej Šorgo</i> (in English language – room Danka)	<b>didactics of science</b> – chairman <i>Prof. Danuta Piróg</i> (in English language – Aula)	<b>Workshops: Laboratory of chemistry</b> Dr. Peter Koloros (in Slavic languages – room 210N)
<ol style="list-style-type: none"> <li>1. <i>Prof. Liberato Cardellini Prof. Elena Marini &amp; Prof. Lidia Papavero - Learning by Doing and Reflecting on Experience</i></li> <li>2. <i>Prof. Wilmo Francisco Junior, Prof. Francisco Wellington &amp; Prof. Yamashita, Miyuki - Video production of experiments by students: an analysis of epistemic practices and multimodality</i></li> <li>3. <i>Prof. Marek Skorsepa &amp; Dr. Petr Šmejkal - Comprehending newly designed activities for computer based science</i></li> <li>4. <i>Dr. Andrzej Karbowski, Dr. Anna Kamińska &amp; Prof. Grzegorz Karwasz - Multimedia in teaching Science</i></li> <li>5. <i>Dr. Michal Musilek - Codes with variable bit-length and their didactic models</i></li> <li>6. <i>Dr. Lubomir Snajder - Model of teaching of mobile applications programming</i></li> <li>7. <i>MSc. Dagmar Stárková &amp; Dr. Martin Rusek - Identification of the Ways of Using ICT in Chemistry Education</i></li> <li>8. <i>MSc. Veronika Havlíčková, Prof. Martin Bílek &amp; Prof. Andrej Šorgo - Virtual Dissection in Biology Education</i></li> </ol>	<ol style="list-style-type: none"> <li>1. <i>Prof. Louis Trudel - Study of the data collection and analysis process of student teachers in a video-based laboratory in kinematics: A case study</i></li> <li>2. <i>Prof. Vasilyeva Polina D. - Interdisciplinare Connections In Teaching Chemistry</i></li> <li>3. <i>Dr. Zuzana Vaclavikova - Interactivity in Education</i></li> <li>4. <i>Dr. Petr Šmejkal, Prof. Marek Skorsepa &amp; Dr. Eva Stratilová Urválková - Newly designed MBL activities perceived by Slovak and Czech secondary school teachers (a comparative study)</i></li> <li>5. <i>Dr. Małgorzata Pietrzak - Transmedia in education natural sciences</i></li> <li>6. <i>Dr. Marián Kireš - The phenomenal analysis of problem solving success within the distance course for Physics Olympiad solvers</i></li> <li>7. <i>Dr. Elżbieta Rozej-Pabijan &amp; MSc. Małgorzata Mielniczuk - Social engagement in environmental protection – forming positive attitudes towards pollinating insects among preschoolers.</i></li> <li>8. <i>MSc. Anna Michniewska – Using MOOC in science education.</i></li> </ol>	

19:30 - Reception – restaurant 'Noworolski' (Rynek Główny, 1 / Main Market Square, 1) <http://www.noworolski.com.pl>

**July 1, 2016**

8:30 – 9:30 Plenary lecture in English language (room Danka 1st floor) – chairman *Prof. Ivana Šimonova*

*Prof. Grzegorz Karwasz, Dr. Andrzej Karbowski & MSc. Krzysztof Służewski - How colors are created?*  
*Prof. Robert Zakrzewski - Invitation to the "School Of Teaching Chemistry"*

9:30 – 10:00 Coffee Break (hall)

10:00 – 12:00 Parallel session

<b>didactics of chemistry</b> – chairman <i>Prof. Robert Zakrzewski</i> (in English language – room Danka)	<b>didactics of science</b> – chairman <i>Prof. Ilona Žeber -Dzikowska</i> (in Slavic languages - Aula)
<ol style="list-style-type: none"><li>1. <i>Prof. Hana Čtrnáctová, Dr. Milada Teplá &amp; Bcs. Lenka Čtrnáctová - IBSE in pre-service and in-service teachers' training</i></li><li>2. <i>Prof. Ján Reguli - Involvement of Controversial Socio-scientific Issues in Chemistry Teachers' Education</i></li><li>3. <i>Dr. Veronika Machova, Dr. Kateřina Chroustová &amp; MSc. Pavla Hanzalová - Towards to Implementation of Mobile Technologies into Laboratory Work at Lower Secondary School</i></li><li>4. <i>MSc. Pavel Miroshnichenko &amp; Natalya Shakirova - Chemistry at Museum for 11-13 years old Children</i></li><li>5. <i>MSc. Anna Baprowska - The influence of organisational conditions on effectiveness of lower secondary chemistry education</i></li><li>6. <i>BSc. Simona Čábelová &amp; Dr. Martin Rusek - The Effectiveness of Different Approaches to Excursions in Waterworks</i></li><li>7. <i>BSc. Linda Honskusová, Bsc. Daniel Pražák &amp; Dr. Martin Rusek - Elementary Students' Views of (School) Chemistry</i></li><li>8. <i>Dr. Machková Veronika, Křížová Michaela, Uždilová Barbora - Small Experimental Projects in Professional Future Science</i></li></ol>	<ol style="list-style-type: none"><li>1. <i>Dr. Małgorzata Pietrzak - Nauczanie poszukujące z wykorzystaniem TIK podczas zajęć terenowych</i></li><li>2. <i>Dr. Libuše Švecová - Study of student's understanding of irreversible processes</i></li><li>3. <i>Dr. Grzegorz Krzyśko - Chemia kryminalistyczna na lekcjach przyrody w szkole</i></li><li>4. <i>Dr. Agnieszka Kamińska-Ostęp - Opinie uczniów gimnazjum na temat czynników wpływających na skuteczne uczenie się chemii.</i></li><li>5. <i>Dr. Simona Hybelbauerová - Alkaloidy - výukové materiály pro SŠ</i></li><li>6. <i>Dr. Robert Wolski - Arduino – electronic devices for chemist</i></li><li>7. <i>Dr. Małgorzata Bartoszewicz - Pomyśl i działaj - eksperyment chemiczny w nauczaniu przyrodniczym</i></li><li>8. <i>MSc. Natálie Karásková - Use of Computer Models in the Organic Chemistry Teaching in the Russian Federation.</i></li></ol>

12:00 – 13:00 Lunch break (Restaurant 'Eden' Bydgoska 19A)

13:00 – 15:00 Panel discussion

<b>The role and place of didactics in different countries</b> - moderated by <i>Prof. Vincentas Lamanaukas</i> (in English language – room Danka)	<b>Teacher training</b> - moderated by <i>Dr. Małgorzata Pietrzak</i> (Polish language - Aula)
<p>discussants:</p> <p><i>Prof. Vincentas Lamanaukas LT,</i> <i>Dr. John Oversby UK,</i> <i>Prof. Hana Čtrnáctová CZ,</i> <i>Prof. Axiniya Egorova RU,</i> <i>Prof. Martin Bílek CZ,</i> <i>Prof. Marco Giliberti IT</i></p> <p><i>Prof. Louis Trudel CDN,</i> <i>Prof. Tatjana Resnik Planic SL,</i> <i>Prof. Anrej Šorgo SL,</i> <i>Prof. Grzegorz Karwasz PL,</i> <i>Dr. Martin Rusek CZ,</i> <i>Dr. Paweł Cieśla PL,</i></p>	<p>discussants:</p> <p><i>Dr. Małgorzata Pietrzak (didactics of geography)</i> <i>Dr. Mirosław Sajka (didactics of mathematics)</i> <i>Dr. Dagmara Sokołowska (didactics of physics)</i> <i>Dr. Iwona Maciejowska (didactics of chemistry)</i> <i>Dr. Robert Czuchnowski (didactics of biology)</i> <i>Prof. Andrzej Rzepka (Director of the Institute of Biology UP)</i></p>

15:00 – 15:30 Closing conference - DidSci 2016



**2 July 2016**

8:30 – 9:30 Plenary lectures (in Polish language - room Danka) – chairman *Prof. Wiktor Osuch*

*Prof. Bożena Wójtowicz - Edukacja geograficzna w aspekcie zrównoważonego –studium porównawcze*  
*Prof. Alicja Walosik & Prof. Małgorzata Nodzyńska - Raport o stanie dydaktyk przyrodniczych w Polsce - po 15 latach*

9:30 – 10:00 Coffee Break (hall)

10:00 – 12:00 Session (in Polish language - room Danka) – chairman *Prof. Małgorzata Nodzyńska*

**didactics of science**

1. *Prof. Alicja Walosik & MSc. Ela Gawron - Rola terenowej edukacji przyrodniczej w kształtowaniu świadomości środowiskowej uczniów*
2. *Prof. Ilona Zeber-Dzikowska & Prof. Jolanta Bąk-Badowska - Zainteresowania biologiczne uczniów na przykładzie form gniazdowania dzikich pszczoł (Hymenoptera: Apoidea: Apiformes)*
3. *Dr. Paweł Cieśla - Nauczanie przyrody w liceum*
4. *Dr. Anna Florek - Przyroda w Liceum Akademii Dobrej Edukacji - przykład realizacji założeń edukacji spersonalizowanej*
5. *Dr. Józef Krawczyk - Monitoring biologiczny środowiska w kształceniu szkolnym, pozaszkolnym i w kształceniu nauczycieli – propozycja programu*
6. *MSc. Ewelina Szymczyk-Krzemińska - Akademia Khana w nauczaniu biologii*

12:00 – 13:00 Lunch break (Restaurant 'Eden' Bydgoska 19A)

13:00 – 15:30 Session (in Slavic languages - room Danka) – chairman *dr Paweł Cieśla*

**didactics of chemistry**

1. *Prof. Jiří Rychtera, MSc. Roman Hásek – Wycieczka do wnętrza silnika spalinowego*
2. *Dr. Piotr Bieniek – Poglądy dydaktyczne Richarda Feynmena*
3. *MSc. Anna Baprowska – Planowanie czasu pracy z podręcznikiem na lekcjach chemii.*
4. *MSc. Anna Michniewska - Akademia Khana w nauczaniu chemii*
5. *MSc. Wioleta Kopek-Putała - Elementy oceniania kształtującego oczami uczniów.*

15:30 Summary and closing of Dydaktyka XX conference