

The growth of mathematical culture in the Lvov area in the autonomy period (1870–1920)

University

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CHAPTER II

UNIVERSITY

2.1. Mathematics at the University

The date of establishment of the Academy²⁴ is considered as the establishment of the Lvov University: January 20th, 1661. King Jan Kazimierz signed the act of foundation, which gave the same rights and privileges to the College of the Jesuit Fathers existing since 1608 and the Academy of Cracow. The Academy was against the approval of the foundation act and it did not really take place then. Only Pope Clement XIII approved it in March 26th, 1759. The Academy had two departments: the philosophical and theological one, but awarded no degrees.²⁵ It functioned until the 1st Partition of Poland in 1773, when Lvov was given to Austria, and the dissolution of the Jesuit Order followed. The Academy was closed²⁶, a high school functioned in its building. In 1784, Emperor Joseph II founded the Lvov University with the Latin language of instruction and four departments. The university, called Joseph's after the name of the ruler, existed until 1804, when it was transformed into a Lvov high school.²⁷ In 1817 Emperor Francis I resumed activity of the University with German language of instruction.

²⁴ See *Pamiętnik obchodu jubileuszowego, w 250 rocznicę założenia Uniwersytetu we Lwowie*, by Wiktor Hahn, Lvov 1914. It is worth noticing that in 1911/1912 academic year the ceremony of 250 anniversary of founding of the first University by the King Jan Kazimierz in 1661. was held

²⁵ The foundation Act In 1758 was signed by the king August III, Pope Klemens XIII approved it with the special bull in 1759. Cracow Academy protested, the Pope cancelled the bull in 1764.

²⁶ See R. Duda, *Lwowska Szkoła Matematyczna*, publ. of Wrocław University, Wrocław 2007. See also Fr. J. Wołczański, *Wydział Teologiczny Uniwersytetu Jana Kazimierza we Lwowie 1918-1939*, Cracow 2002.

²⁷ Nine of Lvov professors from three departments – philosophy, law and medicine have moved to Cracow. Their activities did not last long, till 1809, Franciszek Kodesch was a Professor of pure and applied mathematics (1761–1831). Kodesch lectured in Latin according to the textbooks of Wolff and Kästner and his own notes. The Chair of higher mathematics and astronomy did not have at that time a real professor. Kodesch substituted as the head of the Chair to 1807, then he was replaced by Josseph von Littrow (1781–1840). Later, Littrow became a European celebrity and began scientific work in 1808. He lectured on higher mathematics at the university, as well as mechanics and astronomy. After the occupation of Cracow by the army of the Duchy of Warsaw the new authorities wanted to let Littrow remain at the university, but he accepted an invitation from the University of Kazan and went to Russia. In 1819 he became the director of the Vienna observatory.

After Galicia obtained autonomy (in 1861) Polish language of teaching was introduced in 1871.²⁸

Let us put the above information together:

- 1608–1661 – Jesuit Collegium;
- 1661–1773 – Academy;
- 1773–1784 – Lyceum;
- 1784–1805 – Joseph II University;
- 1805–1817 – Lyceum;
- 1817–1918 – Francis University.

There was a tradition that the lecturers in logic, physics and mathematics had to transfer their pedagogical activity from place to place at least once in four years.²⁹ Thus, more than 60 lecturers teaching mathematics during the period 1608–1744 are known.

Then some special training courses for teachers of mathematics in Jesuit collegia were established in 1743 and existed up to 1773. This led to the foundation of the Chair of Mathematics in 1744 headed by Faustyn Grodzicki (1709–1787). Below is a list of mathematicians working at the University till 1918, that is, until the Lvov University found itself within the borders of the Second Republic and was named after Jan Kazimierz. It was the university at which the world-famous Lvov School of Mathematics functioned. As R. Duda³⁰ noticed, mathematics during the interwar years was the only scientific discipline at the Lvov University which greatly influenced the development of world science. One can even add M. Smoluchowski's results in theoretical physics. Of course, we do not forget about the role that the University fulfilled in past centuries. J. Dybiec insisted

²⁸ In the territory of the Monarchy, universities such as the Jagiellonian University, the Lvov University, Lvov Polytechnic School, University of Agriculture in Dublany, University of Veterinary Medicine in Lvov, Academy of Fine Arts in Cracow, functioned. The literature mentions the Academy of Economics, but it functioned during the Galician autonomy with the rights of a secondary school, like the Industrial School in Cracow. In the period 1861–1870 the repolonisation took place at the Jagiellonian University in Cracow as it became a university with official Polish language of teaching. The number of professors, departments, libraries, laboratories and other academic institutions increased. A little different it was in Lvov during repolonisation of university: the privileged group of Ukrainians and Ruthenians gained voice. It is worth emphasizing that the number of lectures in Polish at the Lvov University increased from 13 in 1857 to 185 in 1906.

²⁹ See Yaroslav G. Prytula, *Remarks on the history of mathematics in Lvov up to the middle of the 20th century, Lvov mathematical School in the period 1915–45 as seen today*, Banach Center Publications, vol. 87, Institute of Mathematics Polish Academy of Sciences, Warszawa 2009, pp. 17–26.

³⁰ At a session organized by the Polish Academy of Sciences, Jagiellonian University, School of Philosophy and Education Ignatianum in Cracow, Pontifical University of John Paul II in Cracow to mark the 350th anniversary of Lvov University in Cracow, 14–15 January 2011, I quote from memory.

on at least four functions of the university: service to the country, state, nations (Polish and Ruthenian) and science.

Below there is a list of people who taught mathematics:

Faustyn Grodzicki (1709–1787)³¹ in the period 1744–1749;
 Michal Redziminowski (1709–1773(?)) in the period 1749–1763;
 Tomasz Siekierzyński (1720–1774)³² in the period 1753–1769;
 Ludwik Hoszowski (1732–1802) in the period 1769–1773;
 Ignacy baron Rain³³ (1736– after 1807) in the period 1774–1785;
 Piotr Lody (1764–1829) in the period 1794–1801);
 Franciszek Kodesch³⁴ (1761–1831) in the period 1787–1807;
 Josseph von Littrow in the period 1807–1810
 Jan Holfeld (1747–1814) in the period 1805–1813;
 L. Schulz von Strasznicki³⁵ (1803–1852) in the period 1834–1838;
 Ignacy Lemoch (1802–1875)³⁶ in the period 1840–1870;

³¹ Author of works on military art and architecture.

³² He has published *The arithmetic*, widely used in Jesuit schools.

³³ Previously, he was a professor of practical anatomy, surveyor and geographer of Galicia, a professor of mathematics at Linz, a professor of political science and an assistant professor of astronomy in Vienna. He did not publish. He vacated the chair after receiving the cathedral presbytery in the the parish of St. Magdalene in Lvov.

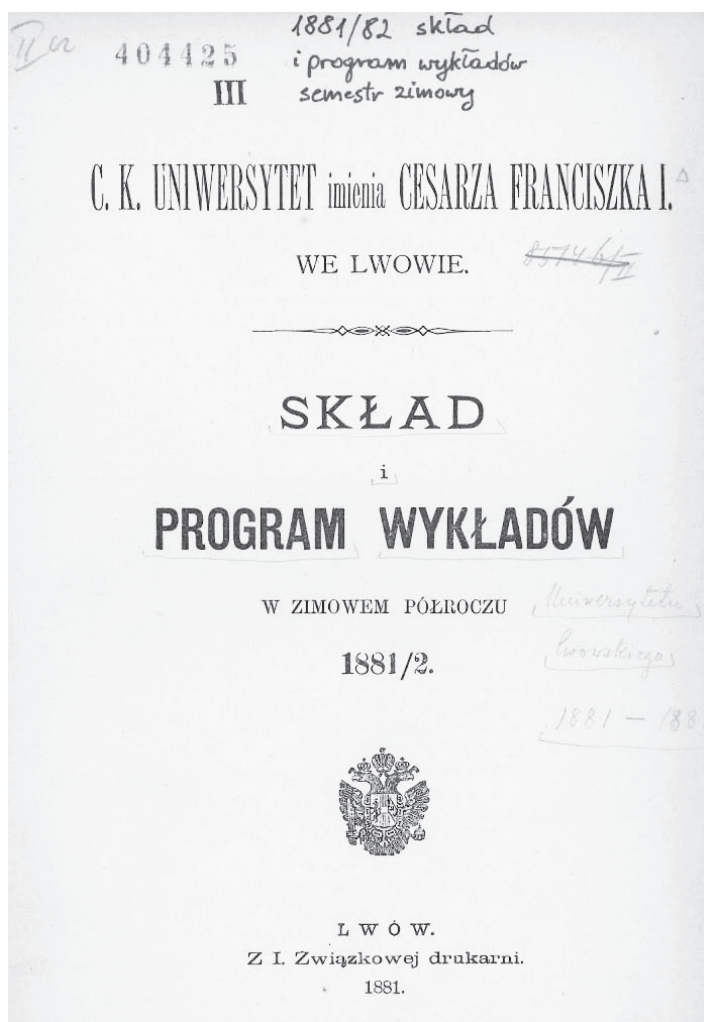
³⁴ Born in 1761 in the town Nachod in the Czech Republic, he was educated in Prague and Bruno. He received a knighthood and the nickname von Treuenhorst. In Lvov he worked for 43 years, with the exception of eight years of professorship in Cracow). He taught mathematics, was the author of textbooks, including *Elementa Mathesis purae in usum iuv. Acad. Gallic.*, (Vol. I, 1818, Volume II, 1820),. A chair of pure mathematics in Vienna was offered to him, but he preferred to remain in Lvov. Later a so-called suplent of mathematics (Assistant teacher, professor). Waclaw Zaleski wrote an obituary that said goodbye to Kodesch as a representative of two different eras. In addition to the elementary mathematics he taught practical geometry and made field trips to teach students measurements. After Kodesch's death 10 candidates came, 4 from Vienna, 4 from Prague, 1 from Graz and 1 from Ljubljana.

³⁵ Schulz Strasznicki was the successor of Kodesch, he was one of the most outstanding mathematicians of the 19th century in Austria. In 1838, he obtained the chair of the Technical University in Vienna. Schulz knew Polish mathematics, often quoted Sniadecki. After Schulz, 20 candidates applied for the chair. Professor Lemoch Ignacy (1802–1875) lectured on mathematics until the introduction of teaching in Polish. Previously, elementary mathematics was taught by a suplent physics professor August Kunzek and assistant professor Joseph Kudella.

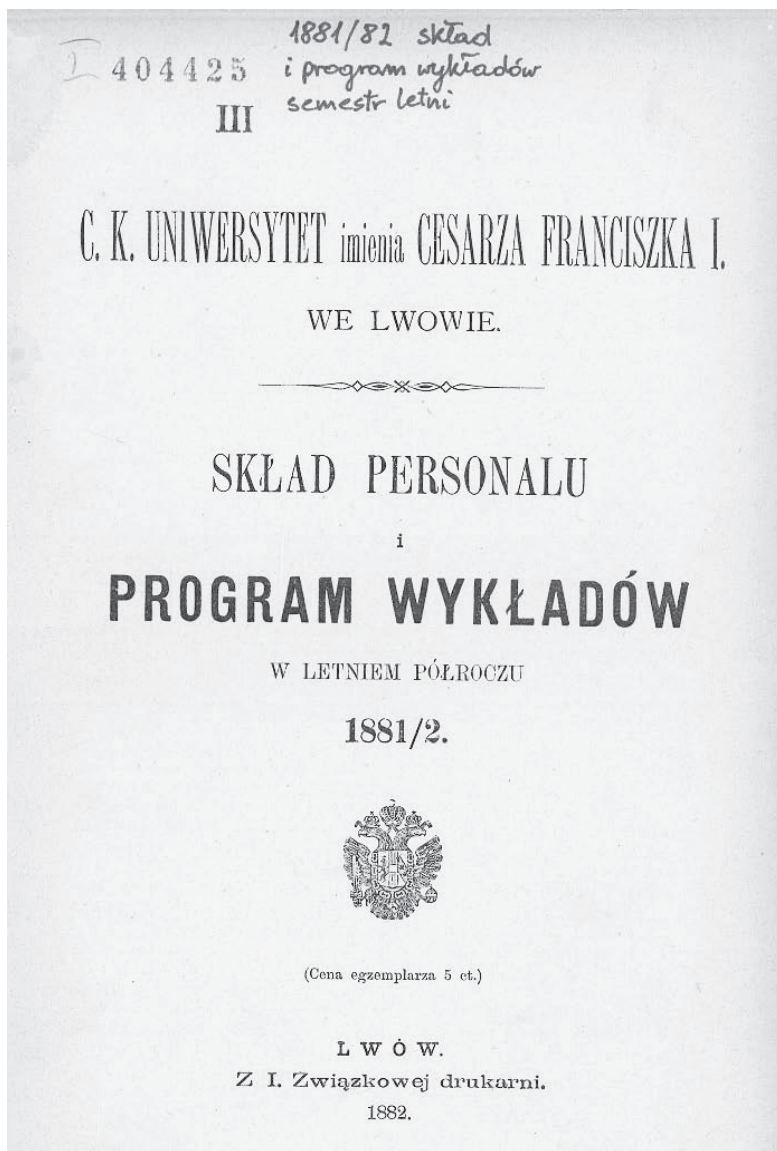
³⁶ Ignacy Wojciech Lemoch (1802–1875), born April 7, 1802 in Netvořice (the Czech Republic) in the family of Joseph, a teacher, and Antoni Pawlowski. There is no information about his studies. Before 1840 he was an official at the court office of constructions in Vienna, had the title of a counsellor to the court constructor. In 1840 he was appointed a professor of practical geometry of the Lvov University, he also taught there elementary and higher mathematics. He wrote a two-volume textbook of geometry: *Lehrbuch der praktischen Geometrie* (1849). He was one of the organizers of the Technical Academy in Lvov, he cooperated with the Court Educational Commission in matters of programme and individual courses. In the period

2.2. Mathematical lectures in the years 1880–1920

Lecture topics have been prepared on the basis of personal makeup and schedules available and preserved in and published by the University, as well as archival material.



1847–1848 he taught at the same university. In the period 1854–1855 he was rector of the Lvov University, in 1843, 1848 and 1858 – the Dean of the Faculty of Philosophy. During 1869–1870 he was an ordinary professor of this university. Till 1870 he fulfilled teaching duties at both universities in Lvov. He was an extraordinary connoisseur of music, left a number of his own compositions. He died on August 21, 1875 in Złoczów.



Cover pages of university publications: *The composition of Staff and Program of lectures* (summer and winter semester 1881/82). Manuscripts concerning schedule at the Philosophy Department could be found at some personal files of the professors at the Lvov University.

wykładowe	godzin	profesora lub Docenta	1924/25	od	do	
poniedziałek	2	D ^r Lopuszko	Inżynier	10	12	X
środa	2	"	"	10	12	X
sobota	2	"	"	10	12	X
wtorek, czwartek i piątek	3	D ^r Fabian	"	11	12	XV
środa				12	1	
czwartek	3	"	"	10	11	XV
sobota				12	7	XV
wtorek piątek				10	11	XV
sobota	3	"	"	8	9	X
w dniemnie inny sobotę	5	D ^r Janowski	"	9	10	X
w dniemnie inny sobotę	5	"	"	12	1	X
sobota	1	"	"	12	1	X
Paź i sobota	2	D ^r Hajdukowski	"	3	4	IX
średniowieczny	1	D ^r ...	"	4	5	IX

Year	Term	Topic of lecture	Lecturer	Number of hours during a week
1881/1882	summer	On the numerical equations	ord. prof. dr <i>Oskar Fabian</i>	3
		Principles of higher analysis	ord. prof. dr <i>Wawrzyniec Żmurko</i>	4
		On the integration of partial differential equations and distinguishing the maxima and minima of definite integrals	ord. prof. dr <i>Wawrzyniec Żmurko</i>	2
		Applications of the determinants to major problems of higher analysis, namely: the transformation of multiple integrals, the integration of differential equations and the general theory of functions	Privatdozent dr <i>Władysław Kretkowski</i>	2
		Analytic Geometry of intersections of cone with special attention to their descriptive properties	Privatdozent dr <i>Władysław Zajęczkowski</i>	3
1884/1885	winter	The initial parts of mathematics with special attention to the needs of theoretical physics	ord. prof. dr <i>Oskar Fabian</i>	3
		Analytical Geometry on the plane and space	ord. prof. dr <i>Wawrzyniec Żmurko</i>	3
		On the determining certain integrals and solving differential equations	ord. prof. dr <i>Wawrzyniec Żmurko</i>	3
1888/1889	winter	Introduction to the infinitesimal calculus	ord. prof. dr <i>Oskar Fabian</i>	3
		The principles of integration of differential equations	ord. prof. dr <i>Wawrzyniec Żmurko</i>	3
		The rules of commutative calculus	ord. prof. dr <i>Wawrzyniec Żmurko</i>	2
		Synthetic geometry	Privatdozent dr <i>Józef Puzyna</i>	2
1890/1891	winter	The theory of analytic functions	extra-ord. prof. dr <i>Józef Puzyna</i>	3
		Theory of linear differential equations	extra-ord. prof. dr <i>Józef Puzyna</i>	3
		Analytic Geometry	ord. prof. dr <i>Oskar Fabian</i>	3
		Exercises in the theory of functions and differential equations	extra-ord. prof. dr <i>Józef Puzyna</i>	2

1891/1892	winter	Theory of Abel's functions	extra-ord. prof. dr <i>Józef Puzyna</i>	3
		Number theory	extra-ord. prof. dr <i>Józef Puzyna</i>	3
		Mathematical exercises	extra-ord. prof. dr <i>Józef Puzyna</i>	2
		Algebraic analysis	ord. prof. dr <i>Oskar Fabian</i>	3
1892/1893	summer	Commutativity calculus	ord. prof. dr <i>Józef Puzyna</i>	3
		Highest Analysis (Completion)	ord. prof. dr <i>Józef Puzyna</i>	3
		Mathematical exercises, Higher division	ord. prof. dr <i>Józef Puzyna</i>	1
		Mathematical exercises, Lower division	ord. prof. dr <i>Józef Puzyna</i>	1
1894/1895	winter	Theory of elliptic functions	ord. prof. dr <i>Józef Puzyna</i>	3
		Introduction to higher mathematics	ord. prof. dr <i>Józef Puzyna</i>	2
		Higher Algebra	ord. prof. dr <i>Oskar Fabian</i>	3
		Mathematical seminar, lower	ord. prof. dr <i>Józef Puzyna</i>	2
		Mathematical seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	2
	summer	Algebra	ord. prof. dr <i>Józef Puzyna</i>	3
		Application of elliptic functions	ord. prof. dr <i>Józef Puzyna</i>	2
		Mathematical seminar, lower	ord. prof. dr <i>Józef Puzyna</i>	2
		Mathematical seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	2
		Analytic Geometry	ord. prof. dr <i>Oskar Fabian</i>	3
1895/1896	winter	Differential calculus	ord. prof. dr <i>Józef Puzyna</i>	3
		Number theory	ord. prof. dr <i>Józef Puzyna</i>	2
		Number equations	ord. prof. dr <i>Oskar Fabian</i>	2
		Mathematical seminar, lower	ord. prof. dr <i>Józef Puzyna</i>	2
		Mathematical seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	2
1897/1898	winter	On analytic functions	ord. prof. dr <i>Józef Puzyna</i>	3
		Higher Algebra	ord. prof. dr <i>Józef Puzyna</i>	2
		Analytical Geometry	ord. prof. dr <i>Oskar Fabian</i>	3
		Mathematical seminar, lower	ord. prof. dr <i>Józef Puzyna</i>	2
		Mathematical seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	2
	Summer	Theory of elliptic functions	ord. prof. dr <i>Józef Puzyna</i>	3
		On the algebraic functions	ord. prof. dr <i>Józef Puzyna</i>	2
		Analytic Geometry, continuation	ord. prof. dr <i>Oskar Fabian</i>	3
		Mathematical seminar, lower	ord. prof. dr <i>Józef Puzyna</i>	2
Mathematical seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	2		

1898/1899	winter	Determinants and their applications	ord. prof. dr <i>Józef Puzyna</i>	2
		On automorphic functions	ord. prof. dr <i>Józef Puzyna</i>	3
		Differential calculus	ord. prof. dr <i>Oskar Fabian</i>	3
		Mathematical seminar, lower	ord. prof. dr <i>Józef Puzyna</i>	2
		Mathematical seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	2
1899/1900	winter	On hypergeometric series	ord. prof. dr <i>Józef Puzyna</i>	2
		Differential calculus	ord. prof. dr <i>Józef Puzyna</i>	3
		Mathematical seminar, lower	ord. prof. dr <i>Józef Puzyna</i>	2
		Mathematical seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	2
	Summer	Integral calculus	ord. prof. dr <i>Józef Puzyna</i>	3
		Integration of ordinary differential equations	ord. prof. dr <i>Józef Puzyna</i>	2
		Mathematical seminar, lower	ord. prof. dr <i>Józef Puzyna</i>	2
	Mathematical seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	2	
1901/1902	winter	Differential calculus	ord. prof. dr <i>Józef Puzyna</i>	3
		Partial Differential Equations	ord. prof. dr <i>Józef Puzyna</i>	2
		Algebraic equations	extra-ord. prof. dr <i>Jan Rajewski</i>	3
		Analytical Geometry	extra-ord. prof. dr <i>Jan Rajewski</i>	2
		Mathematical seminar, lower	ord. prof. dr <i>Józef Puzyna</i>	2
		Mathematical seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	2
		Summer	Partial Differential Equations (completion)	ord. prof. dr <i>Józef Puzyna</i>
	Integral calculus		ord. prof. dr <i>Józef Puzyna</i>	3
	Algebraic equations (continuation)		extra-ord. prof. dr <i>Jan Rajewski</i>	3
	Analytic Geometry (continuation)		extra-ord. prof. dr <i>Jan Rajewski</i>	2
	Mathematical seminar, lower		ord. prof. dr <i>Józef Puzyna</i>	2
	Mathematical seminar, higher		ord. prof. dr <i>Józef Puzyna</i>	2
	The principles of calculus of variations		Privatdozent dr <i>Stanislaw Kępiński</i>	2
	1902/1903	winter	Theory of analytic functions	ord. prof. dr <i>Józef Puzyna</i>
Differential Geometry			ord. prof. dr <i>Józef Puzyna</i>	2
Ordinary Differential Equations			extra-ord. prof. dr <i>Jan Rajewski</i>	3
Differential calculus			extra-ord. prof. dr <i>Jan Rajewski</i>	2
Exercises in differential calculus			extra-ord. prof. dr <i>Jan Rajewski</i>	2

		Mathematical seminar, lower (Analytic Geometry in examples)	ord. prof. dr <i>Józef Puzyna</i>	2	
		Mathematical seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	2	
1904/1905	winter	Number theory	extra-ord. prof. dr <i>Jan Rajewski</i>	3	
		Introduction to higher analysis	extra-ord. prof. dr <i>Jan Rajewski</i>	3	
		Theory of analytic functions	ord. prof. dr <i>Józef Puzyna</i>	3	
		New geometry	ord. prof. dr <i>Józef Puzyna</i>	2	
		Mathematical seminar, lower	extra-ord. prof. dr <i>Jan Rajewski</i>	2	
		Mathematical seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	2	
		Summer	Selected chapters of the theory of numbers	extra-ord. prof. dr <i>Jan Rajewski</i>	3
	Introduction to the higher analysis (continuation)		extra-ord. prof. dr <i>Jan Rajewski</i>	3	
	Theory of elliptic functions		ord. prof. dr <i>Józef Puzyna</i>	3	
	New geometry (completion)		ord. prof. dr <i>Józef Puzyna</i>	3	
	Mathematical seminar, lower		extra-ord. prof. dr <i>Jan Rajewski</i>	2	
	Mathematical seminar, higher		ord. prof. dr <i>Józef Puzyna</i>	2	
	1905/1906		winter	Introduction to higher analysis	ord. prof. dr <i>Józef Puzyna</i>
		Ordinary Differential Equations		extra-ord. prof. dr <i>Jan Rajewski</i>	3
On partial differential equations		Privatdozent dr <i>Stanisław Kępiński</i>		1	
Application of elliptic functions		ord. prof. dr <i>Józef Puzyna</i>		2	
Theory of determinants and its applications		extra-ord. prof. dr <i>Jan Rajewski</i>		2	
Mathematical seminar, lower		extra-ord. prof. dr <i>Jan Rajewski</i>		2	
Mathematical seminar, higher		ord. prof. dr <i>Józef Puzyna</i>		2	
summer		Partial differential equations	extra-ord. prof. dr <i>Jan Rajewski</i>	3	
		From differential geometry	extra-ord. prof. dr <i>Jan Rajewski</i>	2	
		Theory of algebraic functions	ord. prof. dr <i>Józef Puzyna</i>	2	
		Introduction to higher analysis (completion)	ord. prof. dr <i>Józef Puzyna</i>	3	
		On differential equations	Privatdozent dr <i>Stanisław Kępiński</i>	1	
		Mathematical seminar, lower	extra-ord. prof. dr <i>Jan Rajewski</i>	2	
		Mathematical seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	2	

1906/1907	winter	Differential calculus	extra-ord. prof. dr <i>Jan Rajewski</i>	4
		Analytical Geometry	ord. prof. dr <i>Józef Puzyna</i>	3
		Typical differential equations	ord. prof. dr <i>Józef Puzyna</i>	2
		Mathematical seminar, lower	extra-ord. prof. dr <i>Jan Rajewski</i>	2
		Mathematical seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	2
		On integrating differential equations	Privatdozent dr <i>Stanislaw Kępiński</i>	1
	summer	Partial differential equations	ord. prof. dr <i>Józef Puzyna</i>	3
		Analytic Geometry in space	ord. prof. dr <i>Józef Puzyna</i>	2
		Mathematical seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	2
1907/1908	winter	Selected chapters of the theory of analytic functions	ord. prof. dr <i>Józef Puzyna</i>	3
		Linear integral comparisons	ord. prof. dr <i>Józef Puzyna</i>	2
		Mathematical seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	1
	summer	Selected chapters of the theory of analytic functions (continuation)	ord. prof. dr <i>Józef Puzyna</i>	3
		Linear integral equations	ord. prof. dr <i>Józef Puzyna</i>	2
		Analytic Geometry in space	extra-ord. prof. dr <i>Marcin Ernst</i>	3
		Integral calculus	extra-ord. prof. dr <i>Marcin Ernst</i>	2
		Mathematical seminar, lower	extra-ord. prof. dr <i>Marcin Ernst</i>	2
		Mathematical seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	2
1908/1909	winter	Functions of polyhedra, elliptic functions	ord. prof. dr <i>Józef Puzyna</i>	3
		Algebraic Curves	ord. prof. dr <i>Józef Puzyna</i>	2
		Mathematical seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	2
	astronomia	Numerical calculus	extra-ord. prof. dr <i>Marcin Ernst</i>	
1909/10	winter	On partial mappings	ord. prof. dr <i>Józef Puzyna</i>	2
		Ordinary Differential Equations	ord. prof. dr <i>Józef Puzyna</i>	3
		Higher Mathematical Seminar	ord. prof. dr <i>Józef Puzyna</i>	2
		Analytic number theory	Privatdozent dr <i>Wacław Sierpiński</i>	2
		Introduction to analysis	Privatdozent dr <i>Wacław Sierpiński</i>	2
		Mathematical Seminar, lower	Privatdozent dr <i>Wacław Sierpiński</i>	1

1909/10	summer	Ordinary Differential Equations	ord. prof. dr <i>Józef Puzyna</i>	3
		On the mappings of particles	ord. prof. dr <i>Józef Puzyna</i>	2
		Mathematical education seminar	ord. prof. dr <i>Józef Puzyna</i>	2
		Higher analysis	Privatdozent dr <i>Wacław Sierpiński</i>	3
		Set Theory	Privatdozent dr <i>Wacław Sierpiński</i>	1
		Mathematical Seminar, lower	<i>Sierpiński</i>	1
1910/11	winter	Differential calculus	ord. prof. dr <i>Józef Puzyna</i>	2
		Analytic Geometry	ord. prof. dr <i>Józef Puzyna</i>	3
		Mathematical Seminar, higher	ord. prof. dr <i>Józef Puzyna</i>	2
		Higher Algebra	Privatdozent dr <i>Wacław Sierpiński</i>	3
		Critical analysis of basic mathematical concepts	Privatdozent dr <i>Wacław Sierpiński</i>	1
		Mathematical Seminar, lower	<i>Sierpiński</i>	2
			Privatdozent dr <i>Wacław Sierpiński</i>	
1910/11	summer	Analytic Geometry in space	ord. prof. dr <i>Józef Puzyna</i>	3
		Integral calculus	ord. prof. dr <i>Józef Puzyna</i>	2
			ord. prof. dr <i>Józef Puzyna</i>	2
		Mathematical Seminar, higher	extra-ord. prof. dr <i>Wacław Sierpiński</i>	3
		Application of set theory to analysis	extra-ord. prof. dr <i>Wacław Sierpiński</i>	2
		Higher Algebra	extra-ord. prof. dr <i>Wacław Sierpiński</i>	2
		Mathematical Seminar, lower	extra-ord. prof. dr <i>Wacław Sierpiński</i>	2
1911/12	winter	The theory of analytic functions	ord. prof. dr <i>Józef Puzyna</i>	3
			ord. prof. dr <i>Józef Puzyna</i>	2
		Integral equations	ord. prof. dr <i>Józef Puzyna</i>	2
			extra-ord. prof. dr <i>Wacław Sierpiński</i>	4
		Mathematical Seminar, lower	extra-ord. prof. dr <i>Wacław Sierpiński</i>	1
		The theory of infinite series	extra-ord. prof. dr <i>Wacław Sierpiński</i>	1
		Irrationality of the second degree	extra-ord. prof. dr <i>Wacław Sierpiński</i>	2
		Mathematical Seminar, higher	<i>Wacław Sierpiński</i>	2
1911/12	summer	The theory of elliptic functions	ord. prof. dr <i>Józef Puzyna</i>	3
		Integral equations	ord. prof. dr <i>Józef Puzyna</i>	2
		Mathematical Seminar, lower	ord. prof. dr <i>Józef Puzyna</i>	2
		The theory of functions of real variable	extra-ord. prof. dr <i>Wacław Sierpiński</i>	3
		The concept of measure of point sets	extra-ord. prof. dr <i>Wacław Sierpiński</i>	2
		Mathematical Seminar, higher	extra-ord. prof. dr <i>Wacław Sierpiński</i>	2
		The theory of errors (for astronomers)	extra-ord. prof. dr <i>Wacław Sierpiński</i>	2
			extra-ord. prof. dr <i>Marcin Ernst</i>	4

1916/17	winter	Ordinary Differential Equations Introduction to higher algebra Mathematical Seminar, lower Mathematical Seminar, higher Associate Prof. Dr W. Sierpiński interned to Russia and Privatdozent Janiszewski (in Polish Legions) did not declare lectures	ord. prof. dr <i>Jozef Puzyna</i> ord. prof. dr <i>Jozef Puzyna</i> ord. prof. dr <i>Jozef Puzyna</i> ord. prof. dr <i>Jozef Puzyna</i>	3 2 2 2
1916/17	summer	Partial Differential Equations Differential Geometry Mathematical Seminar, lower Mathematical Seminar, higher Set Theory Associate Prof. Dr W. Sierpiński interned to Russia, declared no lectures	ord. prof. dr <i>Jozef Puzyna</i> ord. prof. dr <i>Józef Puzyna</i> ord. prof. dr <i>Józef Puzyna</i> ord. prof. dr <i>Józef Puzyna</i> Privatdozent dr <i>Zygmunt Janiszewski</i>	3 2 2 2 2
1917/18	summer	Differential Geometry Partial Differential Equations Mathematical Seminar, lower Recent studies in the theory of functions of real variable Mathematical Seminar, higher Theory of functions of real variable Privatdozent Dr Z. Janiszewski did not present lectures	ord. prof. dr <i>Józef Puzyna</i> ord. prof. dr <i>Józef Puzyna</i> ord. prof. dr <i>Józef Puzyna</i> extra-ord. prof. dr <i>Waclaw Sierpiński</i> extra-ord. prof. dr <i>Waclaw Sierpiński</i> Privatdozent dr <i>Hugo Steinhaus</i>	3 2 2 5 2 4
1918/19	winter	Introduction to higher analysis Non-Euclidean geometry Mathematical Seminar, higher Set Theory Number theory Mathematical Seminar, lower Privatdozent Dr. Z. Janiszewski did not present lectures	ord. prof. dr <i>Józef Puzyna</i> ord. prof. dr <i>Józef Puzyna</i> ord. prof. dr <i>Józef Puzyna</i> extra-ord. prof. dr <i>Waclaw Sierpiński</i> extra-ord. prof. dr <i>Waclaw Sierpiński</i> extra-ord. prof. dr <i>Waclaw Sierpiński</i>	3 2 2 3 2 2

Data for years 1918 /1919 (winter term) come from the last *Programme of lectures of c.k. University named after Emperor Francis I in Lvov*. The *Programme* for summer term was not issued. Another *Programme* (which had the Lvov University in the headline, not Jan Kazimierz yet and not with an eagle

for mathematics on it) began with a lecture of private reader (privatdozent) Hugo Steinhaus – *Introduction to the analysis* – 3 hours. Puzyna was already dead, Sierpiński and Janiszewski worked in Warsaw, the socio-political situation changed, however mathematical education and fostering of culture of mathematics did not stop.

2.3. Mathematical studies of Franciszek Leja

On the basis of F. Leja's³⁷ credit book we will present a programme of mathematical studies at the Lvov University. These studies, in the case of candidates for secondary school teachers, were the first step that had to be completed in order to enter the hierarchy of gymnasium professors. F. Leja, who later became a specialist in the field of analytic functions and a professor at the Jagiellonian University, after graduation from Lvov passed teaching examination and became a teacher in Bochnia. He published a paper in the *School Report* and was noticed by Kazimierz Żorawski – a professor of mathematics at the Jagiellonian University.

Curriculum vitae.

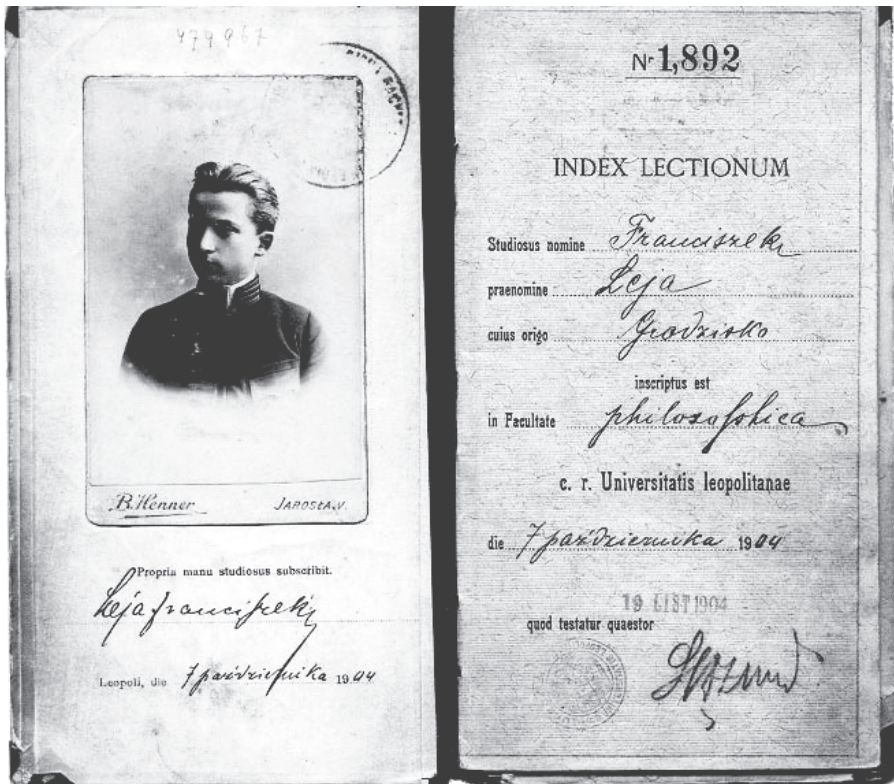
*Data urodzenia 27. stycznia 1885 r.
 Studya gimnazyalne ukończony w latach 1899-
 1901. w cz. gimnazjum w Jasztardzie i otrzyman
 egzamin dojrzałości w r. 1901.
 W latach 1904-1908. byłem studencem wydzia-
 łu filozoficznego uniwersytetu we Lwowie i sta-
 chalem uczestnikiem matematyki, fizyki i filozo-
 fii historycznej. W r. 1907/8. byłem studencem wydzia-
 łu prawniczego we Lwowie. W r. 1909. otrzyman
 egzamin na maturalną matematyki i fizyki
 w celu wstąpienia przed komisją egzaminu we
 Bochni.
 Od roku 1910. poświęciłem sobie nauczanie
 matematyki i fizyki, stając się cz. T.
 gimnazjum w Krakowie.
 W roku szkol. 1914/5. objąłem stanowisko z fundu-
 sów śp. kwatrowskiego w opuszczeniu na wyjazd do
 granicy i studium uczestnictwa matematyki
 w Sorbonie w Paryżu.*

W Krakowie dnia 10. lutego 1916.

Franciszek Leja

³⁷ Sincere thanks to Professor dr hab. J. Siciak from the Jagiellonian University for providing F. Leja's credit book.

As Leja wrote in his CV in 1909: *I passed the exam for teachers of mathematics and physics in secondary schools before the examination commission in Lvov. Since 1910, I fulfill the duties of a teacher of mathematics and physics in the c.k. V gymnasium in Cracow. In 1912/1913 I got a subsidy from late Kretkowski's fund for travelling abroad, and listened to the lectures on mathematics at the Sorbonne in Paris. In 1914 he was a member of The Legions.* As he also mentioned in his CV, in 1904–1908 he studied at the Faculty of Philosophy at the Lvov University. On the example of his studies we will show what mathematical studies looked like in Lvov.



The title page of Franciszek Leja's credit book, 1904

The following subjects were recorded and completed in the F. Leja's credit book:

Mathematical:

Introduction to the higher analysis, the new geometry, analytic geometry, mathematical seminar, selected chapters of number theory, number theory,

theory of errors, theory of algebraic functions, ordinary differential equations, partial differential equations, linear integral equations, exercise in solving school equations, logic.

Physico-chemical:

Experimental Physics, Thermodynamics, Kinetic theory of gases, Optics and the theory of electricity, Electricity and magnetism, Mechanics of elastic bodies, Celestial mechanics, Chapters in physical chemistry, Principles of electrochemistry, General Chemistry, General Introduction to astronomy, Electrochemistry, Practical exercises in the physical laboratory, Practical exercises in the chemical laboratory.

Pedagogical, philosophical, philological, health-related:

The history of pedagogy in the XVII century, metaphysics, The history of philosophy to Aristotle, The outline of the history of philosophy, Philosophy of Aristotle and Plato, The history of recent philosophy to Kant, Psychology of education, Outline of psychology, on teaching methods, Outline of somatology and hygiene, Infectious diseases, main directions of scientific ethics, Issues of free will, On the national education, Problems of free will, History of Polish literature in the era of renaissance, Methodological introduction to the study of Polish literature, Geschichte deutsche Literaturen XVIII, French language course.

At a time when F. Leja studied in Lvov students could choose from the following subjects:

TERM I

The beginning of the term: 3 May 1905.

The end of the term: 31 July 1905.

The beginning of the credits: 25 April 1905.

The end of the credits: 10 May 1905

From 11th to 18th May 1905 one could register only by permission of proper professorial staff, from 19th to 31st May 1905 – only by permission of the academic Senate.

Experimental Physics part I

ord. prof. dr S. Zakrzewski,

Monday to Friday, from 10 to 11 am.

Introduction to higher analysis

ord. prof. dr J. Puzyna,

on Tuesday, Thursday and Saturday, from 8 to 9 am.

General Chemistry for listeners of Philosophical and Medical Faculties

ord. prof. dr B. Radziszewski,
every day, from 9 to 10 am.

New Geometry

ord. prof. dr J. Puzyna,
on Monday, Wednesday and Friday, from 9 to 10 am.

Mathematical seminar, lower

associate prof. dr J. Rajewski,
on Tuesdays and Fridays, from 11 to 12 am.

Number Theory

associate prof. dr J. Rajewski,
on Monday, Wednesday and Friday, from 8 to 9 am.

TERM II

The beginning of the term: 3 May 1905.

The end of the term: 31 July 1905.

The beginning of the credits completion: 25 April 1905.

The end of the credits completion: 10 May 1905

From 11th to 18th May 1905 one could register only by permission of proper professorial staff, from 19th to 31st May 1905 – only with the agreement of the academic Senate.

New Geometry (final)

ord. prof. dr J. Puzyna,
on Monday, Wednesday and Friday, from 11 to 12 am.

Selected chapters of number theory

associate prof. dr J. Rajewski,
on Monday, Wednesday and Friday, from 8 to 9 am.

Experimental Physics part II

ord. prof. dr S. Zakrzewski,
every day except Saturday, from 10 to 11 am.

Introduction to higher analysis**Introduction to higher analysis (continuation)**

associate prof. dr J. Rajewski,
on Tuesday, Thursday and Saturday, from 8 to 9 am.

Mathematical seminar, lower

associate prof. dr J. Rajewski,
on Tuesday and Friday, from 11 to 12 am.

General Chemistry (continuation)

ord. prof. dr B. Radziszewski,
every day, from 9 to 10 am.

Chapters of physical chemistry

ord. prof. dr S. Zakrzewski,
on Monday and Thursday, from 12 to 1 pm.

TERM III

The beginning of the term: 1 October 1905.

The end of the term: 5 April 1906.

The beginning of the credits completion: 23 September 1905.

The end of the credits completion: 8 October 1905

From 9th to 16th October 1905 one could register only by permission of proper professorial staff, from 17th October to 1st December 1905 – only by permission of the academic Senate.

Metaphysics

associate prof. dr Młcisław Wartenberg,
on Monday, Tuesday and Wednesday, from 4 to 5 pm.

Mathematical seminar, lower

ord. prof. dr Puzyna,
on Monday Friday, from 12 to 1 am.

Practical exercises in the physics lab

ord. prof. dr S. Zakrzewski,
every day, during the hours of free lectures, 4 hours a week.

History of pedagogy in XVII century

private reader dr B. Mańkowski,
on Tuesday, Thursday and Friday, from 7 to 8 pm.

Outline of somatology including health and hygiene with particular emphasis on school hygiene, and learning about first aid in emergencies

reader dr J. Szpilman,
on Friday and Saturday, from 4 to 5 pm.

Celestial mechanics

private reader dr M. Ernst³⁸,
on Monday, Wednesday, Friday and Saturday, from 10 to 11 am.

Introduction to the Higher Analysis

ord. prof. dr J. Puzyna,
on Monday, Wednesday and Friday, from 9 to 10 am.

Main directions of scientific ethics

ord. prof. dr K. Twardowski,
on Monday, Tuesday Wednesday and Thursday, from 8 to 9 am.

the History of Philosophy to Aristotle,

ord. prof. dr K. Twardowski,
on Friday, from 6 to 7 pm.

Infectious diseases with particular emphasis on infectious diseases occurring among schoolchildren: cause, symptoms, prevention, disinfection

reader dr J. Szpilman,
on Saturdays, from 3 to 4 pm.

TERM IV

The beginning of the term: 19 April 1906.

The end of the term: 31 July 1906.

The beginning of the credits completion: 11 April 1906.

The end of the credits completion: 27 April 1906

From 28th April to 5th May 1906 one could register only by permission of proper professorial staff, from 06th to 31st May 1906 – only by permission of the academic Senate.

Introduction to Higher Analysis (final)

ord. prof. dr J. Puzyna,
on Monday and Wednesday, from 11 to 12 am.

³⁸ Marcin Ernst (1869–1930), graduated from the classical gymnasium in Warsaw in 1890, studied at the tsar university in Warsaw 1890-1896 and Berlin 1900-1901. He worked at observatories in Potsdam, Berlin and Paris. Doctor of Philosophy in the field of astronomy in Berlin. He got the habilitation in astronomy at the Lvov University, 1900. He taught elements of mathematics at the Polytechnic School in Lvov (1906/7) and at the University 1906–1908. Author of textbooks on astronomy and cosmography.

Theory of algebraic functions

ord. prof. dr J. Puzyna,
on Monday and Wednesday, from 9 to 10 am.

Metaphysics (continuation and completion)

associate prof. dr M. Wartenberg,
on Monday, Tuesday and Wednesday, from 4 to 5 pm.

Partial Differential Equations

associate prof. dr J. Rajewski,
on Monday, Wednesday and Friday, from 8 to 9 am.

Practical exercises in physics lab

ord. prof. dr S. Zakrzewski,
every day, during the hours of free lectures, 4 hours a week.

Mathematical seminar, lower

ord. prof. dr J. Puzyna,
on Tuesday and Friday, from 11 to 12 am.

The Outline of the history of philosophy, part II,

ord. prof. dr K. Twardowski,
on Friday, from 6 to 7 pm.

Psychology of teaching (part III of Didactics),

Private reader dr B. Mańkowski,
on Tuesdays, Thursday and Friday, from 7 to 8 pm.

Outline of somatology and hygiene with particular emphasis on school hygiene with presentations

reader dr J. Szpilman,
on Saturday, from 3 to 5 pm.

Mechanics of elastic bodies

ord. prof. dr M. Smoluchowski,
every day except Saturday, from 10 to 11 am.

Exercises in theoretical physics

ord. prof. dr M. Smoluchowski,
on Tuesday and Thursday, from 11 to 12 am.

The principles of electrochemistry

associate prof. dr S. Tołłoczko,
on Tuesday, Thursday and Saturday, from 8 to 9 am.

TERM V

The beginning of the term: 1 October 1905.

The end of the term : 5 April 1906.

The beginning of the credits completion: 23 September 1905.

The end of the credits completion: 8 October 1905

From 9th to 16th October 1905 one could register only by permission of proper professorial staff, from 17th October to 1st December 1905 – only by permission of the academic Senate.

Analytic Geometry

ord. prof. dr J. Puzyna,
on Monday, Wednesday and Friday, from 9 to 10 am.

Ordinary Differential Equations

ord. prof. dr J. Puzyna,
on Tuesday and Thursday, from 9 to 10 am.

Mathematical seminar, higher

ord. prof. dr J. Puzyna,
on Monday and Tuesday, from 11 to 12 am.

Practical exercises in the physics lab

ord. prof. dr S. Zakrzewski,
every day, during the free lectures, 4 hours a week.

Electricity and Magnetism

ord. prof. dr M. Smoluchowski,

Exercises in theoretical physics.

ord. prof. dr M. Smoluchowski,
on Tuesdays and Fridays, from 11 to 12 am.

General introduction to astronomy

associate prof. dr M. Ernst,
on Monday, Wednesday, Friday and Saturday, from 3 to 4 pm.

Logics

ord. prof. dr K. Twardowski,
on Monday, Tuesday, Wednesday and Thursday, from 8 to 9 am.

Philology of Plato and Aristotle

ord. prof. dr Twardowski,
on Friday, from 6 to 7 pm.

History of newer philosophy to Kant

associate prof. dr M. Wartenberg,
monday, Tuesday, Wednesday and Thursday, from 4 to 5 pm.

Issues of free will

associate prof. dr M. Wartenberg,
on Friday, from 4 to 5 pm.

History of Polish literature in the era of Renaissance

Associate prof. dr W. Bruchnalski,
on Monday and Thursday, from 5 to 6 pm.

Methodological introduction to the study of Polish literature,

associate prof. dr W. Bruchnalski,
on Saturday, from 5 to 6 pm.

Geschichte der deutschen Literatur im XVIII

prof. dr R. Werner,
on Monday, Wednesday and Friday, from 12 to 1 pm.

TERM VI

The beginning of the term: 19 April 1907.

The end of the term: 31 July 1907.

The beginning of the credits completion: 11 April 1907.

The end of the credits completion: 27 April 1907

Partial differential equations,

ord. prof. dr Puzyna.
on Monday, Wednesday and Friday, from 11 to 12 am.

Analytic geometry in space

ord. prof. dr J. Puzyna,
on Tuesdays and Thursdays, from 11 to 12 am.

Mathematical seminar, higher,

ord. prof. dr J. Puzyna,
on Tuesday and Thursday, from 9 to 10 am.

Optics and the theory of electrons

ord. prof. dr M. Smoluchowski,
every day except Saturdays, from 10 to 11 am.

Exercises in theoretical physics

ord. prof. dr M. Smoluchowski,
two hours a week, later they are noted.

Theory of errors

Associate prof. dr M. Ernst,
on Monday and Thursday, from 3 to 4 pm.

Practical exercises in physics lab

ord. prof. dr S. Zakrzewski,
every day, during the hours of free lectures, 4 hours a week.

Practical exercises in the chemical laboratory for the Philosophy Department

ord. prof. dr Radziszewski,
every morning and in the afternoon, except Saturday afternoons. It was
counted as 10 hours a week.

About national education

private reader dr Mańkowski,
on Tuesday, Thursday and Friday, from 7 to 8 am.

Philosophy of Plato and Aristotle

ord. prof. dr K. Twardowski,
on Friday, from 6 to 7 pm.

TERM VII

The beginning of the term: 1 October 1907.

The end of the term: 9 April 1908.

The beginning of the credits completion: 23 September 1907.

The end of the credits completion: 8 October 1908

From 9th to 16th October 1907 one could register only by permission of proper professorial staff, from 17th October to 1st December 1907 – only with the agreement of the academic Senate.

Selected paragraphs from the theory of analytic functions

ord. prof. dr J. Puzyna,
on Monday, Wednesday and Friday, from 11 to 12 am.

Linear integral equations

ord. prof. dr J. Puzyna,
on Tuesday, Thursday, from 11 to 12 am.

Mathematical seminar, higher

ord. prof. dr J. Puzyna,
on Thursday, from 9 to 10 am.

Thermodynamics

ord. prof. dr M. Smoluchowski,
every day except Saturday, from 10 to 11 am.

Exercises in theoretical physics

ord. prof. dr M. Smoluchowski,
on Monday and Friday, from 9 to 10 am.

An outline of psychology, Part I.

ord. prof. dr K. Twardowski,
on Monday, Tuesday, Wednesday and Thursday, from 8 to 9 am.

About teaching methods

private reader Dr B. Mańkowski,
on Tuesday, Thursday and Friday, from 7 to 8 am.

Advanced French language course

lecturer Bignat,
on Tuesday and Thursday, from 3 to 4 pm.

The issue of freedom of will

Associate prof. dr M. Wartenberg,
on Friday, from 5 to 6 pm.

TERM VIII

The beginning of the term: 23 April 1908.

The end of the term: 31 July 1908.

The beginning of the credits completion: 15 April 1908.

The end of the credits completion: 1 May 1908
From 02 to 09 May 1908 one could register only by permission of proper professorial staff, from 06 to 31 May 1908 – only by permission of the academic Senate.

Selected chapters of the theory of analytic functions (continuation)

ord. prof. dr J. Puzyna,
on Monday, Wednesday and Friday, from 11 to 12 am.

Linear integral equations

ord. prof. dr J. Puzyna,
on Tuesday and Thursday, from 11 to 12 am.

Mathematical seminar, higher,

ord. prof. dr J. Puzyna,
on Monday, Tuesday and Thursday, from 9 to 10 am.

The kinetic theory of gases

ord. prof. M. Smoluchowski,
Every day except Saturday, from 10 to 11 am.

Exercises in theoretical physics

ord. prof. M. Smoluchowski,
on Monday and Friday, from 9 to 10 am.

Exercises in performing school experiments

ord. prof. dr S. Zakrzewski,
on Monday, from 4 to 6 pm.

Practical exercises in physics lab

ord. prof. dr S. Zakrzewski,
every day in hours free of lectures. It was counted as 4 hours weekly.

Electrochemistry, Part I

associate prof. dr S. Tołoczko,
on Tuesday and Thursday, from 5 to 6 pm.

Outline of psychology. Part II,

ord. prof. dr K. Twardowski,
on Monday, Tuesday, Wednesday and Thursday, from 7 to 8 am.

2.4. Mathematical studies of Stanisław Ruziewicz

We introduce the well-known figure of the Lvov School of Mathematics, a professor in the interwar period, who had studied at the Lvov University at the time we are interested in, (we use archival documents from the Archives in Lvov district from the personal file of Stanisław Ruziewicz). In this case, it will be an example of academic career. Assistants in the departments began to appear since the end of the 19th century, when the seminar library was created at each chair. Ruziewicz was the first mathematician who used this opportunity.

Stanisław Leon Ruziewicz was born on August 29, 1889 in Podstaje (Kolomyja District in Galicia). He was the son of Teresa Jasińska and Franciszek, a rural craftsman in masonry, who died when Stanisław was fifteen. He attended the four-class non-compulsory school. In 1901 he began education in the Gymnasium in Kolomyja, a classical gymnasium with the Polish language of teaching, and then he moved to c.k. Gymnasium named after Francis Joseph in Lvov, where he attended classes II–IV, but the classes V–VIII – back in Kolomyja, where on June 2nd, 1908 he passed the school final exam with honours.

21	Fordes Nachum Isaak	Tarnopol	..	moż	1890	1901–1908	doj. z odzn.
22	Radłowski Józef	Monasterzyska	..	gr.-kat.	1887	1900–1905	dojrzały
23	Ruziewicz Stanisław Leon	Podstaje	..	rz.-kat.	1889	1901–1908	doj. z odzn.
24	Specht Walenty	Baginsberg	..	ewang.	1889	1901–1908	dojrzały
25	Tepper Maurycy	Kolomyja	..	moż.	1887	1901–1908	..

Fragment of the list of candidates who took the school final exam on 25.05–2.06.1908 (Report of the management of c.k. Higher Gymnasium with the Polish language of teaching in Kolomyja at 1907/8 school year), the information includes name, place of birth, religion, years of education and information about passing the final exam.

In gymnasium and during university studies Ruziewicz continued to make a living by giving private lessons. In 1908 he began studies at the Philosophy Faculty at the Lvov University. Waław Sierpiński wrote a note placed in Annual of the Warsaw Scientific Society: *In 1908 at the Lvov University a young student started to attend lectures and drew attention by the accuracy of his statements in seminar classes. It was Stanisław Leon Ruziewicz, a native of the Stanisławów province*³⁹. Ruziewicz at the very beginning of the study aroused interest and appreciation of professors, then he became closer with professor Sierpinski. This acquaintance developed further into cooperation in solving mathematical problems. On July 15, 1912 the Professors Staff of the Philosophy Faculty at the Lvov University at the request of professors of mathematics and theoretical physics enacted nomination to a scholarship of 100 crowns per semester to

³⁹ W. Sierpiński, *Stanisław Ruziewicz (1889–1941)*, Rocznik Towarzystwa Naukowego Warszawskiego (1938–45), p. 244.

Rosort Min. W. R. i. O. P. Urząd Uniwersytet Jana Kazimierza Wydział filozoficzny
 Miejscowość Lwów Województwo rosyjskie Klasa miejscowości (strzyżona) I

KARTA INDYWIDUALNA № 4

Imię Stanisław Nazwisko Ruziewicz Numer w liście płacy za styczeń 29.
 Dzień, miesiąc i rok urodzenia 29/VIII 1889 Miejsce urodzenia (miejscowość) Podstaje
 pow. Kołomyjska woj. Stanisławowski
 Płeć mężczyzna Stan cywilny żonaty Wyznanie prawosł.-kat. Narodowość polaka

Wykształcenie

Niższe: rodzaj i nazwa zakładu Szkola powszechna ilość ukończonych klas 4
 Średnie: rodzaj i nazwa zakładu Gimnazjum klasyczne ilość ukończonych klas Sięga do
 Wyższe: rodzaj i nazwa zakładu Uniwersytet w Lwowie: Geografia fakultet filozoficzny
 Ilość przesłuchanych semestrów 12 czy studia zostały całkowicie ukończone nie
 Jakim egzamina zostały złożone Doktorat filozofji

Zawód główny w lipcu 1914 roku

Rodzaj Nauczony Stanowisko w zawodzie Ukierunkowywacz i sekretarz w
 Nazwa instytucji lub przedsiębiorstwa Pracownia dr. filozofji

Wzór A. — 425.000.
Środki Ark. Wyp. Gł. „Prawo”, Fl. Białost., Kresztowa 7-8.

O p i s

dokładny przebiegu służby wojskowej w b. państwie austriackim
 Prof. Uniwersytetu Jana Kazimierza we Lwowie Dr. Stanisława Ru-
 ziewicza, urodzonego 29.VIII. 1889 w Podstajach, pow. Kołomyjska.

Do wojska wzięty z pospolitego ruszenia w czerwcu 1915 roku
 w Stanisławowie. Dnia 18 czerwca 1915 r. odwieziony do Kałusza,
 stamtąd do Nagy Csakany na Węgrzech. Po paru tygodniach przydzielony
 do 24 p.p., stojącego wówczas w Dé-vavanya /Węgry/. Stamtąd od-
 komenderowany do cenzury wojskowej we Lwowie. Z powodu zapalenia
 stawów odcodzi w lutym 1916 r. do szpitala Czerwonego Krzyża we
 Lwowie, a z tego szpitala odwieziony zostaje w maju 1916 r. do Pięszosan
 / Pöstyen - ówczesne Węgry /. Stamtąd, po przejściu przez inne szpi-
 tale, dostaje się w sierpniu 1916 r. do kadry 24 p.p. w Freudenthal
 /Sląsk/. Później pełni chwilowo wojskową służbę kancelaryjną, prze-
 rywaną pobytami w szpitalach / Jägerndorf - Śląsk /. W styczniu 1918 r.
 z Komisją przeglądową /Musterungskommission/ jedzie na Bukowinę.
 Po powrocie zostaje przydzielony w lutym 1918 r. do rezerwy pisarzy
 w Lobnitz / Śląsk /. Powołany stąd z powrotem do cenzury wojskowej
 we Lwowie, nie wraca z powodu wybuchu tyfusu plamistego w Lobnitz.
 Z końcem kwietnia 1918 r., przy przeglądzie, zostaje urlopowany /ent-
 hoben/ do końca roku 1918.

Stanislaw Ruziewicz – a fourth-year philosophy student, as a scholarship holder of the reference library of these departments.

In 1913 Ruziewicz received a doctorate in philosophy with a thesis *O funkcji ciągłej monotonicznej nie posiadającej pochodnej w nieprzeliczalnej mnogości punktów*⁴⁰ [On a continuous, monotone function which does not have derivative in an uncountable set of points], under the supervision of Józef Puzyna. He returned to that problem later. In 1913–1914 academic year Ruziewicz received a scholarship from the Academy of Sciences in Cracow from the foundation of Władysław Kretkowski⁴¹, he went to Göttingen for the year, and that gave him a chance to get acquainted with the problems of contemporary European mathematical research. In Göttingen the tensions connected with the upcoming outbreak of the I World War could be seen. In June 1915 he was enlisted into the Austrian army from the general levy. At the beginning he was stationed in Kalusz, and later was commissioned to Hungary and finally to a unit involved in the military censorship in Lvov. Because of arthritis, in February 1916 he was taken to a Red Cross hospital in Lvov, and in May to the hospital in Piszczany. Then, he temporarily was on duty of office military service, interrupted by stays in hospitals. In January 1918, together with the Revision Committee he was in Bukovina. In February Ruziewicz was assigned to the reserve writers in Löbnitz⁴², and was again called to military censorship in Lvov. He did not come back because of typhus in Löbnitz. At the end of April 1918 he was on leave.

In July 1918 Ruziewicz got his habilitation at the Lvov University for the work *On the monotonic continuous functions with intervals of constancy almost everywhere*⁴³. In the habilitation process professors of the Faculty of Philosophy, Waclaw Sierpiński and Józef Puzyna took part.

It should be mentioned that the introduction of the idea of set theory at the Lvov University took place on many levels, including the scientific degrees.

⁴⁰ Sprawozdania Towarzystwa Naukowego Warszawskiego 6 (1913), pp. 282–305. Ruziewicz in this paper constructs an original continuous monotonic function, known to us as a function of Cantor, proving its non-differentiability at an uncountable number of points. Thickening resulting singularity, one gets the non-differential function at an uncountable number of points. As J. Mioduszewski notes, he referred a few times to this work, credited his predecessors, and gave his own new constructions.

⁴¹ The main purpose of his foundation was to provide scholarships to young mathematicians to go abroad for training in various areas of modern mathematics.

⁴² Today Bielsko-Biała, Wapienica district.

⁴³ *O funkcjach ciągłych, monotonicznych posiadających pantachiczne przedziały stałości*, Prace Matematyczno-Fizyczne 27 (1916), pp. 19–31. This dissertation inspired him to analyze carefully the behavior of the functions of Cantor and Harnack at points do not lie within the ranges of constancy proving that, for innumerable number of these points, there are sequences convergent to them, after which the differential quotients tend to infinity, and such after which differential quotients tend to zero.

We will present the questions, asked in 1918 by professors J. Puzyna and W. Sierpiński, from personal file of S. Ruziewicz – a future professor at the University of Jan Kazimierz.

WYDZIAŁ FILOZOFICZNY
 Uniwersytetu Lwowskiego.

L. 1064 ex 1917/18

Protokół

REGULACJA HABILITACYJNEGO DE. FIZIOL. I. RUSIJSKICZKA
 spisany na XVa. posiedzeniu Grona profesorów Wydziału filozoficznego c. k. Uni-
 wersytetu lwowskiego, które się odbyło dnia 3. 11 p o 1918

pod przewodnictwem Dziekana
 Prof. Dr. Eugeniusza R. C.

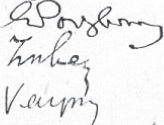

Obecni:

<p>Prof. Dunikowski Prof. Kruczkiewicz Prof. Puzyna Prof. Huszowski Prof. Dembiński Prof. Ignacy Zakrzewski Prof. Twardowski Prof. Boloż-Antoniewicz Prof. Finkel Prof. Kolosa Prof. Zuber Prof. Kallenbach Prof. Witkowski Prof. Nusbaum-Hitarowicz Prof. Askenazy Prof. Porębowicz Prof. Wartenberg Prof. Bruchnański Prof. Studziński Prof. Toltoczko Prof. Romer Prof. Ernst</p>	<p>Prof. Kasprowicz Prof. St. Zakrzewski Prof. Wójcicki Prof. Konst. Zakrzewski Prof. Weyberg Prof. Dollmayr Prof. Nitsch Prof. Siemiradzki Prof. Kwietniewski Prof. Sierpiński Prof. Opolski Prof. Czekanowski Prof. Bulanda Prof. Chybiński Prof. Sajdak Prof. Hirschler Prof. Gajkowski Dr. Opolski <i>Delegaci</i> Dr. Kiełkowski <i>Docentów pryw.</i></p>
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Nieobecni:

profesorie: huszowski, Dembiński, Finkel, Kolosa, Kallenbach, Witkowski,
 Askenazy, Studziński, Wójcicki, S. Zakrzewski, Weyberg, Sie-
 miradzki, Chybiński,

The Protocol of the S. Ruziewicz habilitation colloquium.

Przedmiot.	Uchwała.
Prof. Ruzynski zadaje następujące pytanie:	
1. Liczności punktów - teorii funkcji analitycznych	
2. Tworzenie funkcji eliptycznych,	
3. Teoremy Mittag-Lefflera,	
4. Równanie Weierstrassa i Cauchy-sis situs	
Prof. Sierpiński zadaje następujące pytanie:	
1. Prawdopodobieństwo i jego rola w matematyce.	
2. Zagadnienie continuum oraz hipoteza continuum i ich wzajemny związek.	
Po odbyciu kolokwium wnoszą prof. Ruzynski, by uznać je za zadowalające Prof. Sierpiński do wniosku tego się przyłącza.	Uchwalono jednogłośnie
Prof. Ruzynski i Sierpiński wnoszą, by z trzech podanych przez Dr. Ruziewicza tematów:	
1. Przedmiot teorii mnogości oraz rola jej w matematyce,	
2. O liczbach niearchimedajskich,	
3. Kierunki badań we współczesnej teorii funkcji analitycznych, wybrać pierwszy jako temat wykładu pубnego.	Uchwalono jednogłośnie
	
	 t. cz. Dziękuję, Ruziewicz

The continuation of the protocol of the S. Ruziewicz habilitation colloquium from July 3, 1918, which shows that S. Ruziewicz's habilitation lecture was related to the subject of set theory and its role in mathematics. Habilitation colloquium ended with a unanimous and positive resolution.

In 1918-1920, Ruziewicz taught at the real school in Łańcut, as the deputy math teacher, and in May he was transferred to the same position in VIII Gymnasium in Lvov, where until December 1919 he taught mathematics in higher classes. At the same time he lectured on mathematical analysis and the foundations of mathematics at the Lvov University as a Polish lecturer of the I Chair of Mathematics. These are already the chapters belonging to the Jan Kazimierz University and the Lvov School of Mathematics.

2.5. Professors and readers of mathematics

At the beginning we make a preliminary presentation of professors and readers on the basis of materials from the *Composition of professorial staff*. Such biographical details were presented in the university publication concerning the programme and the makeup of the Philosophy Faculty.

Wawrzyniec Żmurko (1824–1889), lectured in 1871–1889; Doctor of Philosophy, c.k. public professor of mathematics at University and Polytechnic School in Lvov, Francis - Joseph's knight, member of Academy of Skills and Physiographical Committee in Cracow and of imperial examination board for candidates of grammar-school teachers, director of imperial examination board for real schools in Lvov, honorable member of Society of the Sciences in Paris, active member of imperial Galician Farm Society in Lvov, member-correspondent of Society of Friends of Science in Poznań, vice-dean in 1873 and 1880, and dean of Philosophical Faculty at the Lvov University in 1879.

(from *the Composition of professorial staff* 1882)

Oskar Fabian (1864–1899), lectured in 1873–1899; *Oskar Fabian*, Philosophy Dr, imperial ordinary professor of mathematical physics, reader of Polytechnic school, member of imperial examination board for candidates for real schools in Lvov, member and former chairman of Polish Society of Scientists named after Kopernik in Lvov, member of German imperial Leopold-Charles scientific Academy in Halle, in 1885 – dean and in 1886 – vice-dean of Philosophical Faculty

(from *the Composition of professorial staff* 1889)

Józef Puzyna (1856 – the next 1919), lectured in the period 1890–1919;

For the first time Józef Puzyna appeared in *the Composition of professorial staff* in 1890/91. Here we find further information: *Philosophy Dr, ordinary professor of mathematics, member of c.k. examination board for candidates of real and grammar school teachers in Lvov, the Dean of Philosophical Faculty*. In the summer term 1894/95 Puzyna was already introduced as *the ordinary*

professor of mathematics, the Dean of Philosophical Faculty.

Jan Rajewski (1857–1906), lectured in 1901–1906

Philosophy Dr, associate professor of mathematics, former professor of Public industrial School (with the rights of secondary school) in Cracow.

(from *the Composition of professorial staff* 1901)

Wacław Sierpiński (1882–1969), lectured in the period 1908–1918 with the break for internment in the years 1914–1917.

Zygmunt Janiszewski (1888–1920), lectured in the period 1914–1919 with the break to participate in the Legions in the years 1914–1917.

Hugo Steinhaus (1887–1972), lectured in Lvov in the period 1917–1918, then till 1939.

Privatdozents:

Władysław Zajączkowski (1837–1898), *Philosophy Dr, private reader of mathematics, professor of mathematics at imperial Polytechnic school, member-correspondent of Academy of Skills in Cracow and Society of Sciences in Paris.*

(from *the Composition of professorial staff* 1882)

Władysław Kretkowski (1840–1910), lectured in the years 1881–1883, *Philosophy Dr, Master of Mathematics of Paris academy, private Senior doctor lecturer of mathematics, engineer of roads and bridges, certified pupil of school of roads and bridges in Paris, member of Polytechnic Society in Lvov, former railway engineer, former reader of mathematics in imperial Polytechnic school in Lvov*

(from *the Composition of professorial staff* 1882)

Stanisław Kępiński (1867–1908), lectured In 1901–1908

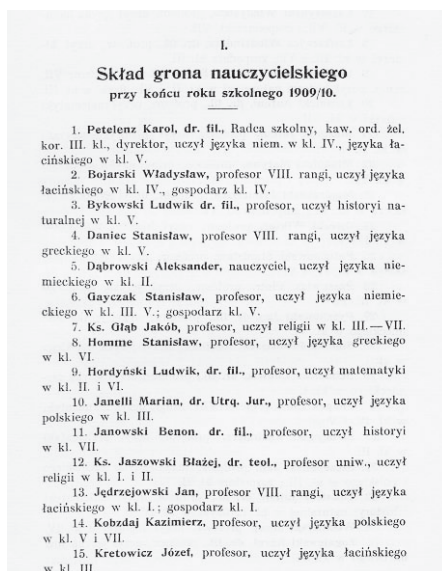
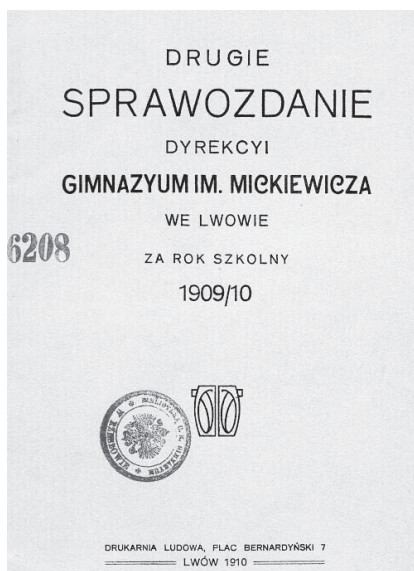
Philosophy Dr, private Senior doctor lecturer of mathematics, ordinary professor of mathematics in Lvov Polytechnic school.

(from *the Composition of professorial staff* 1901)

Let us note that although the group of professors and readers was not too numerous, their involvement in activities of many institutions, societies, committees was impressive. Among them were members of the Academy of Sciences in Cracow, the members of the examining board for teachers, members of the Lvov scientific societies, as well as the Society of Sciences in Paris. One can see their cooperation with mathematicians from the Polish lands belonging to other occupants, as well as with Polish mathematicians from abroad.

Department of Mathematics

Spring of Nations, the aspiration for freedom opens a new phase of the university (1848–1871). The Philosophy Department obtained permission to conduct independent studies. On September 29th, 1848, the authorities in Vienna introduced Polish as the language of teaching. German professors protested, Lvov was bombed, revolutionary sentiments were suppressed and the authorities in Vienna on December 4th, 1848 cancelled the previous order and German language again became the teaching language at the university. Attempts to make the University Polish in 1858, gradually led to an increase of chairs with Polish language of teaching. But only after 1871, since the provision of the Austrian authorities about freedom of choosing the teaching language, we can consider that Polish was restored at the Lvov University. The head of the Department of Mathematics in the period 1872–1889 and a long-term professor of mathematical analysis and theoretical mechanics was Wawrzyniec Żmurko (1824–1889).



The title page of the *Second Report of the Management of Gymnasium named after Mickiewicz in Lvov*. Next to it, there is the teachers' staff list for the 1909–1910 school year, among others L. Hordyński taught mathematics in II and VI classes. National Regency Treasury in Lvov paid 200 crowns to Jan Rajewski and Józef Puzyna in 1904 for managing a Mathematical seminar in the Department of Philosophy. It is worth noticing that 8 students of the mathematical seminar were granted scholarship for continuation of their work. Professors cared about educating young staff and effectively gained funds for this purpose, definitely too small in relation to the financial needs.

After the death of Żmurko in 1889 the Knyaz (Prince) Puzyna Józef (1856–1919) became the head of the Department. The scientific and organizational activities of both of them, are seen in the huge commitment and significant contribution to the development of mathematical culture. Among other things, during J. Puzyna's activity the Math seminar came into being at the Lvov University with two lower and higher divisions (from 1893 to 1894). In the lower division students received some problems to work out on their own or after discussion with the professor. In the higher division more extensive topics were worked out, for example within the higher seminar work the work of Ludwik Hordyński⁴⁴ – later the first treasurer of the Cracow Mathematical Society – *O wyznacznikach częściowo przetworzonych* [On partially processed determinants] (Wiadomości Matematyczne VIII (1904)). A chronicle of the meetings of the seminar was kept.

At the turn of the 19th century, Lvov and Cracow⁴⁵ areas played more and more outstanding role in the development of mathematical sciences in Poland. In Lvov, J. Puzyna published two volumes of *Teoria funkcji analitycznych* [Theory of analytic functions], which S. Saks and A. Zygmund wrote about later, saying: *it is a true encyclopaedia of analysis: next to the analytical theory of functions – partially outlined in a beautiful approach according to Weierstrass – it collects information from the fields of set theory and topology (analysis situs), group theory, algebra, differential equations, harmonic functions*⁴⁶.

It seems that Puzyna's role in the history of mathematics in Poland, particularly his care about the scientific development of the youth, encouragement to scientific work, establishing an atmosphere of scientific and didactical work, attention to appropriate education of the students and gymnasium pupils, joining to the global trend of research, is little known in the literature. Waclaw Sierpiński, Zygmunt Janiszewski and Hugo Steinhaus came to Lvov, habilitated and began their work thanks to Puzyna. Puzyna was very active among teachers and all those who were interested in research in mathematics, he supported, corrected and encouraged them.

Below we will present information about the professors of mathematics, emphasize their scientific development, thus we will discuss their impact on forming the mathematical culture.

Wawrzyniec Żmurko attended a gymnasium in Przemyśl in 1834–1844, then graduated from the Lvov University's "philosophical studies"⁴⁷ which in

⁴⁴ L. Hordyński was a doctor of philosophy, a doctorate was on the basis of this thesis in 1907, when he also passed the exam for teachers to teach mathematics and physics.

⁴⁵ E. Marczewski, *Rozwój matematyki w Polsce* [Development of mathematics in Poland], PAU Cracow, MCMXLVIII.

⁴⁶ See S. Saks, A. Zygmund, *Funkcje analityczne* [Analytic functions], Monografie Matematyczne, X, Warszawa–Lwow–Wilno, 1937, p. VI.

⁴⁷ In Vienna in 1849 *Entwurf der Organisation der Gymnasien und Realschulen In Oesterreich* appeared; which was one of the oldest school codes used in Europe. The authors of the

the words of J. Puzyna covered the last two classes of gymnasium of the 90s of the 19th century⁴⁸. After his studies in Lvov, he went to Vienna where he studied mathematics at the University and the Polytechnics. He was a student of, among others, Littrow, who previously lectured on mathematics in Lvov and Cracow. He gave many private lessons, and developed his methods of integration, which, with the help of another student, draw attention of Viennese professors. He published a dissertation *Beitrag zum Integral-Calcul* in the journal of Academy of Sciences in Vienna. In 1849 on the basis of that dissertation he became the reader at the Technical University of Vienna. In 1851, the Ministry of Education in Vienna appointed him a professor at the Technical Academy in Lvov. Since then, he lived and worked in Lvov only. He had a big impact on mathematics in Lvov, after all, he introduced in Lvov the study of mathematics in Polish. He is the author of work entitled *Wykład matematyki na podstawie ilości o dowolnych kierunkach* [The lecture course based on quantities of arbitrary directions] (1864). He is forgotten as a mathematician, but apart from the two mentioned works he published also some other:

- *Drei Aufsätze aus dem Gebiete der höheren Mathematik* (lithograph, Lvov, 1858);
- *Über die Flächen zweiter Ordnung mit zugrundelegung eines mit beliebigen Achsenwinklen versehenen Coordinatensystem* (Academy of Science, Vienna, 1866);
- *Über die Bestimmung des Rauminhaltes von Körperschichten, welche von parallelen Ebenen Grundflächen und von Umflächen zweiter Ordnung begrenzt sind*, Lvov, 1866;
- *Beitrag zur Theorie des Grössten und Kleinsten der Functionen mehrerer Variablen* Academy of Science, Vienna, 1866;
- *Beitrag zum Integral-Calcul*, Lvov, 1867;
- *O styczności kół i kul* [About tangency of circles and spheres], Rocznik Towarzystwa Naukowego Krakowskiego [Cracow Scientific Society Annuals], pp. 69–93, 1869), by methods of descriptive geometry, using the concept of rectangular connection, he presents his search for a construction of a ball tangent to four given balls⁴⁹;

Code were Mr F. Exner (1802–1859), a professor of philosophy at German university in Prague and H. Bonitz (1814–1888), a school teacher in Leipzig, Berlin and Stettin, later a classical philologist in Vienna. The former “study of philosophy” was separated from the university. Its existence contradicted the principle of freedom of university. The elimination of philosophical study at the universities resulted in the creation of eight-year gymnasium. The former Humanities (humaniora) classes in conjunction with the study of philosophy became the basis for the four-year higher level gymnasium. Grammar classes comprised four-year lower level gymnasium.

⁴⁸ See. J. Puzyna, *Prof. Wawrzyniec Żmurko, jego życie i dzieło* [Professor Wawrzyniec Żmurko his life and works], Kosmos XIV(1889), pp. 169–184.

⁴⁹ Apoloniusz of Perga 200 years B.C. was interested in this problem.

- *Studium im Gebiete numerischer Gleichungen im Raume* (Academy of Sciences, Vienna, 1876);
- *Dowód na twierdzenie Hessego o wyznaczniku funkcyjnym* [Proof of a theorem of Hesse on a functional determinant], *Pamiętnik Towarzystwa Nauk Ścisłych w Paryżu* [Memoirs of the Society of Sciences in Paris], 1871, one of the first work in Polish on the theory of determinants;
- *Przyczynek do teorii największości i najmniejszości funkcji wielu zmiennych* [Contribution to the theory of minima and maxima of a function of many variables], also in the *Pamiętnik Towarzystwa Nauk Ścisłych w Paryżu* [Memoirs of the Society of Sciences in Paris], 1871;
- *Beitrag zur Erweiterung der Operationslehre der constructiven Geometrie*, Lvov, 1873;

In this paper he gave a description of instruments constructed by himself.

- *O styczności stożków obrotowych* [About tangency of rotating cones], *Sprawozdania Akademii Umiejętności w Krakowie* [Reports of the Academy of Sciences in Cracow], 1874;
- *Przyczynek do rachunku przemienności* [Contribution to the calculus of commutativity], *Pamiętnik Akademii Umiejętności w Krakowie* [Memoirs of Academy of Sciences in Cracow], 1875;

Theorie der relativen Maxima und Minima bestimmter Integrale, Academy of Science, Vienna, 1876;

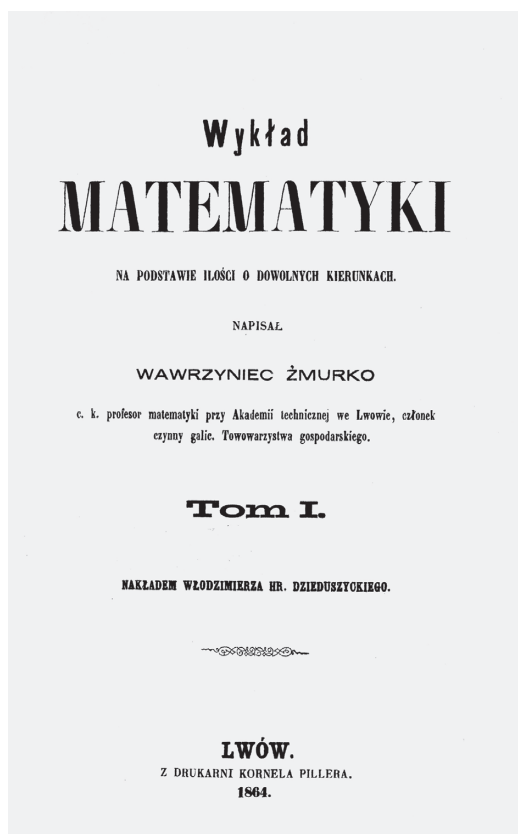
- *O ważności i zastosowaniu funkcji oskulacyjnej w rachunku przemienności – znamiona największości i najmniejszości całek określonych* [On the importance and application of osculate function in the calculus of commutativity – features of minima and maxima of definite integrals; features of higher order], *Pamiętnik Akademii Umiejętności w Krakowie* [Memoirs of Academy of Sciences in Cracow], 1876, Franciszek Mertens – professor of mathematics at the Jagiellonian University argued with this work then;
- *Über Kriterien höherer Ordnung zur Unterscheidung der relat. Maxima i Minima bestimmter Integrale*, Academy of Science, Vienna, 1876;

— *Badania w dziedzinie nauk o równaniu* [Research in the field of study of equation], *Pamiętnik Towarzystwa Nauk Ścisłych w Paryżu* [Memoirs of the Society of Sciences in Paris], 1879.

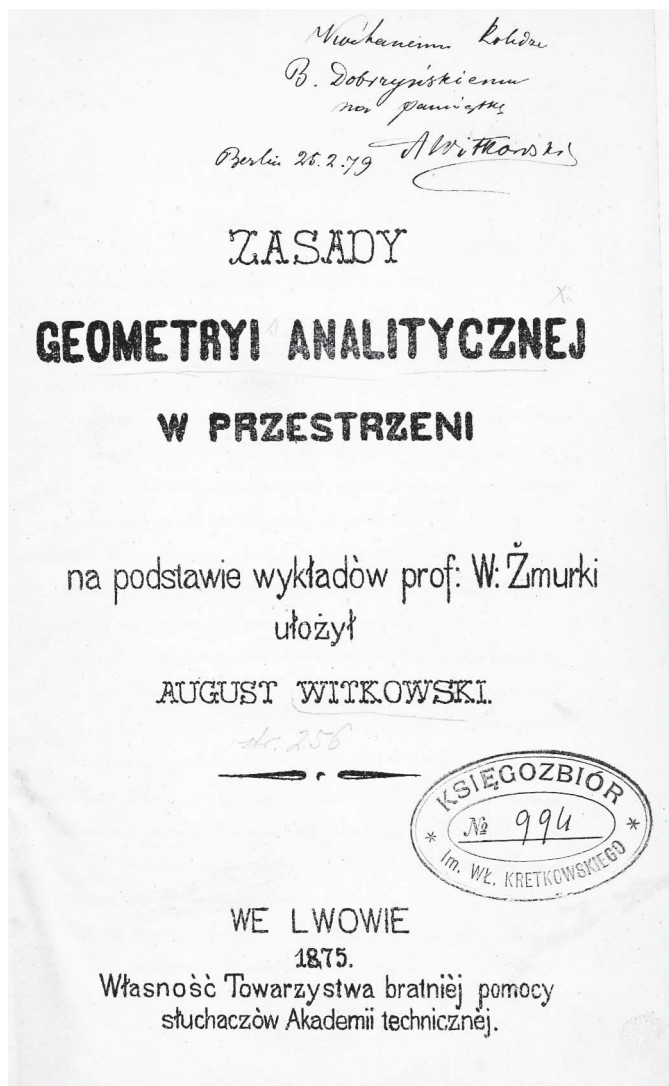
Żmurko was the author of over 25 works, also jointly with Oscar Fabian, a professor of mathematical physics at the Lvov University including *Matematyka dla szkół średnich*, *Geometria na klasy niższe szkół średnich napisana wedle systemu i ze współudziałem prof. Wawrzyńca Żmurki. Zeszyt I na klasę I i II* [Mathematics for secondary schools, Geometry for the lower classes of secondary schools according to the system of prof. Wawrzyniec Żmurko and written with his participation. Handbook I for the I and II class], Lvov 1876.

Assessing Żmurko's achievements J. Puzyna stressed his accomplishments in the creation of mathematical terms and ingenuity, particularly in the creation of mathematical instruments and in teaching. He noted that his works were of good quality and contained original results. Let it be mentioned that Żmurko worked during a period of stagnation in the field of mathematical sciences in Galicia, and his accomplishments have made the atmosphere more favourable to the mathematical sciences. Till 1881 he headed mathematics faculties at the same time at the Polytechnic School and University.

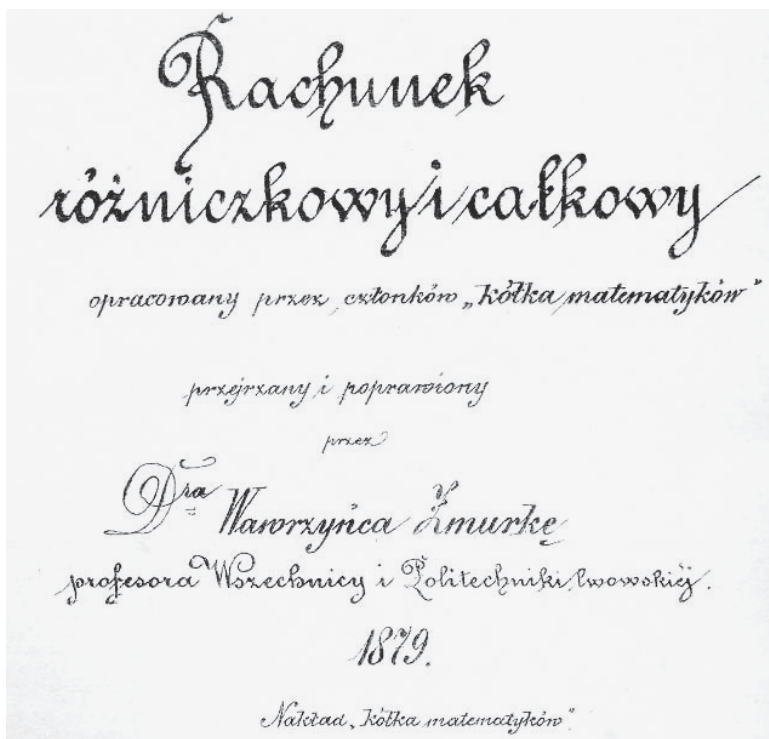
In 1885/86 academic year he was the rector of Lvov University. He belonged to the founders of the Polytechnic Society in Lvov (1865), was a member of the Academy of Sciences in Cracow. In 1887–1888 he was deputy director of the joint commission for candidates for real secondary school teachers and gymnasia. In 1878 he received a doctorate honoris causa from the Lvov University.



Title page of *The lecture course based on quantity of arbitrary directions*, written by c.k. professor of mathematics at the Technical Academy in Lvov, active member of the Galician Association for economy.



The cover page of Żmurko's lectures of analytic geometry. The lectures were prepared for publication by a physicist, August Witkowski, who later became famous.



Cover page of W. Żmurko's *Differential and integral calculus* developed by students grouped in the Circle of Mathematicians.

Józef Puzyna



After studying at the Lvov University in 1875–1882 as W. Żmurko's student, and at the University of Berlin as K. Weierstrass's student, and in 1883,

after completing the doctorate degree on the basis of dissertation *O pozornie dwuwartościowych określonych całkach podwójnych* [On seemingly bivalent definite double integrals] in the Lvov University, he associated his scientific and teaching activities only with the Lvov University. In 1885 he habilitated and taught mathematics as an assistant professor. He headed the Department of Mathematics as an associate professor in the period of 1889–1892 and since 1892 as a professor until his death. He was a very good lecturer and lectured on many branches of mathematics. He also held responsible positions at the university: he was rector in 1904/5 academic year, and vice-rector in 1905/6, Dean of the Faculty of Philosophy in 1894–1895. The work of his life was the two-volume *Teoria funkcji analitycznych* [Theory of analytic functions] (1898–1900), in which he not only gave a comprehensive lecture on analytic functions with the latest developments in this area, but also an exposition of the foundations of set theory and group theory (the work of Puzyna is discussed in more detail in Chapter V).

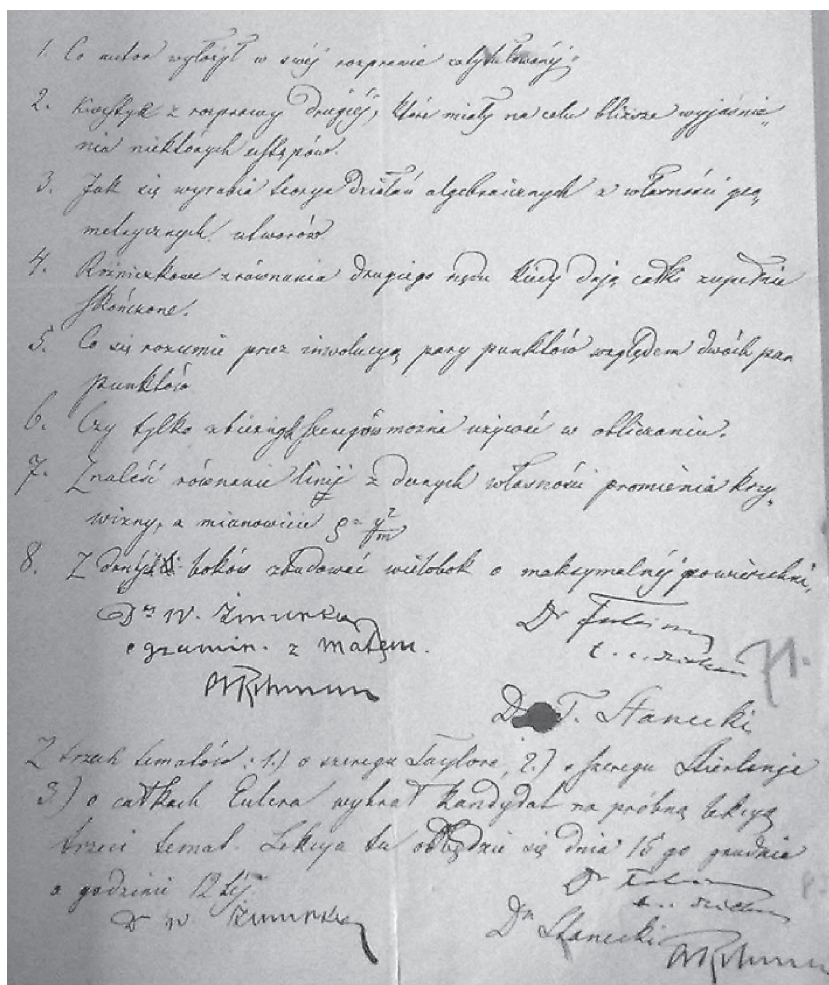
Na podstawie czterech:
 nych: absolutorium i
 rozprawy matematycznej
 ratyfikowanej „O pozornie
 dwuwartościowych określo-
 nych całkach podwójnych”
 uprasza niniejsz podpisanym
 o przyznawanie go do
 egzaminów ścisłych
 z matematyki wraz z u-
 borem fizyka

We Lwowie dnia 17 lutopada 1882

Josef Puzyna

Fragment of Puzyna's application from November 17th, 1882 for admission to doctoral examinations. He chose physics as the additional subject (J. Puzyna personal file, District Archives in Lvov).

On the 8th of November, 1884, Puzyna asked “Great Professors Staff of the Faculty of Philosophy at the Lvov University for admission to habilitate for the Privatdozent of mathematics.” In the existing documents we can find that professor of mathematics, Žmurko, examined J. Puzyna, the Dean of the Faculty of Philosophy – Oscar Fabian chaired the exam. Questions that Žmurko asked were the following:



Topics and dates for the habilitation procedure of J. Puzyna (from District Archives in Lvov, J. Puzyna's personal file)

What the author represented in his dissertation;

- Issues of the second dissertation, which aimed to clarify certain paragraphs;

Besides the so-called ordinary activities of a professor, Puzyna dealt with the problem of lack of jobs for mathematicians. He often asked the Ministry in Vienna for employing a reader as a private assistant professor. It took place only in 1900, when J. Rajewski took the associate chair. There was a shortage of posts as well as other resources for research. When J. Puzyna asked the Ministry of Religion and Enlightenment in Vienna for a grant to publish The theory of analytic functions, he received a negative response.

An

das Hohe k. k. Ministerium
für Kultus und Unterricht

in

Wien.

Das Professoren-Collegium der
philosophischen Facultät der
k. k. Universität Lemberg

mit Befürwortung der Bitte
des s. o. Professors der Mathematik
Dr. Josef Puzyna um einen Druck-
kostenbeitrag behufs Publicirung
des I. Bandes seines Werkes u. d. T.
„Functionentheorie.“

The information from 1898 addressed to professor Puzyna about refusing his request for a grant in the amount of 800 zł, which he intended to spend on publishing the volume I of Theory of analytic functions (District Archives of Lvov).

Józef Puzyna was extremely devoted to the issues of teaching mathematics. He wrote reviews of school textbooks and of articles published in *School Reports*, increasing their status. After publication of Placyd Dziwiński's textbook of algebra⁵⁰ he said that recently two very valuable items appeared: *Zasady i pojęcia matematyki* [Principles and concepts of mathematics] by Samuel Dickstein and *Zasady algebry dla gimnazyów i szkół realnych* [Rules of algebra for gymnasia and real schools] by P. Dziwiński.

In his view, mathematics has made great progress thanks to such mathematicians as Weierstrass⁵¹, Cantor⁵², Hankel⁵³, Kronecker⁵⁴, Dedekind⁵⁵ and others. He also said that the teaching of mathematics should not “divagate from the new theories,” but the content should be summarized in a textbook in such a way, that the pupil (and later the student) would know about the “continuous connection with what they will hear later.” Symbols played an important role in Dziwiński's textbook; thanks to them, proofs of properties of subtraction and division were simplified. Both the author and the reviewer attributed a large role in teaching to general rules, for example they simultaneously discuss the properties of division integers and polynomials. The review is thorough and concerns issues such as ranks, convergence of geometric series and their applications in economic issues, combinatorics, probability calculus, determinants, how complex numbers apply to the problems of geometry, elements of the history of mathematics. As the reviewer mentioned – “*a student of mathematics should know about those, who for centuries made it possible for us to get that knowledge in a general and comfortable form, that we can enjoy today.*”

Another example of Puzyna's reliability is his review of a work from 1892⁵⁶ of gymnasium teacher Jan Korczyński *Elementarna teoria wyznaczników* [An elementary theory of determinants], which appeared in the Report of c.k. gymnasium of St. Hyacinthus in Cracow.

⁵⁰ In Lvov, in 1891, P. Dziwiński's textbook *Zasady algebry dla wyższych klas gimnazyów i szkół realnych* [Rules of algebra for the higher classes of real gymnasia and schools] was published by the Society of Teachers of Higher Education, 384 pages and XI, to 1912, there were five editions adapted to the programmes approved by the National School Board.

⁵¹ Karl T. W. Weierstrass (1815–1897) was a German mathematician who is often cited as the “*father of modern analysis*”.

⁵² Georg F. L. Philipp Cantor (1845–1918) was a German mathematician best known as the inventor of set theory, which has become a fundamental theory in mathematics.

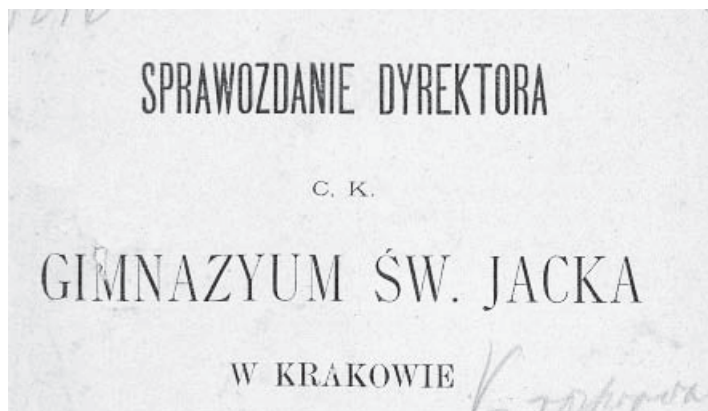
⁵³ Hermann Hankel (1839–1873) was a German mathematician, remembered mainly for the Hankel functions. He wrote about determinants, complex numbers, functions, and the history of mathematics. He also studied the foundations of arithmetic, and the theory of integration.

(<http://thesaurus.maths.org/mmkb/entry>, (8.03.2010))

⁵⁴ Leopold Kronecker (1823–1891) was a German mathematician and logician who argued that arithmetic and analysis must be founded on “whole numbers”.

⁵⁵ Julius W. Richard Dedekind (1831–1916) was a German mathematician who did important work in abstract algebra (ring theory), algebraic number theory and the foundations of the real numbers.

⁵⁶ Muzeum VIII(1892).



Cover page Reports

Puzyna noticed that if such an elementary work on determinants would appear in the French or German literature, then one needs to ask *quousque tandem?* In the Polish, not very extensive, literature, however, such a work was very useful for school students who will enter universities in the near future and will be able to calculate the determinants of 2nd and 3rd degree. However, he critically remarked: it seems to me disadvantageous that the author of such an important theorem as expanding the determinant in terms of one row or one column with $n > 3$ leaves it without proof, and gives just a hint, saying, “*quite the same way you can sort out the determinants of higher orders*”. Puzyna held that more difficult contents, beyond the capacities of the students, would not be left for them to work out. Later in the review he paid attention to issues related to the recursive definition of determinant. In conclusion, he highlighted the value of this essay.

Puzyna also had great accomplishments in the introduction of the set theory in Poland, but these are somewhat underappreciated. It is remembered that W. Sierpiński gave the first lecture on set theory at the Lvov University in 1909 and wrote a book *Zarys teorii mnogości* [An outline of the set theory] in 1919, or one remembers an article in *Poradnik dla samouków* [The guide for the self-taught] from 1915. It is however less known that in Poland it was Puzyna who first wrote about this theory in the work *Theory of analytical functions* (I volume was published in Lvov in 1898, II volume also in Lvov in 1900, this work was discussed in Chapter V). It is worth noting that Puzyna introduced the language of set theory, and used the language of intuitive topology.

Regarding the subject of formation of mathematical culture in Lvov during the autonomy period, there is an interesting note in Puzyna’s personal file. In 1907 he participated in the work related to a survey conducted among all university professors of mathematics of the Monarchy. The purpose of this survey was to develop a memorandum which was later submitted to the Minister

of Religious Affairs and Education in Vienna. The memorandum showed the necessity of increasing the number of mathematics chairs in universities of the Monarchy. The fragment which Puzyna prepared was the following:

The increasing development of knowledge generates the need for continuous expansion of scientific forces. Too small number of chairs can cause the stoppage of development of science. The Commission is in favor of comprehensive assistance to young researchers – private docents. The Commission sees the University as an institution that enables the existence of readers and the opportunity to cultivate qualified disciplines.

Wniosek.

Rozrost coraz większy wszelkich gałęzi wiedzy spowoduje potrzebę ciągłego powiększania się naukowych w uniwersytetach, które, jako ogniska nauki, mają, co raz dalej, wyrażać wiedzę do przetrwania.

Gdy jednak liczbę katedr systematycznie pod ograniczają, przeto o taki program nie w ogóle jest dość środków; a dostarczać go mogą jedynie metody pracowni, wypożyczając się do instytucji jako docenci prywatni. – Tu tedy należy się wszelkie poparcie ze strony uniwersytetów. – W wiek w niektórych ustąg oddawanych należy i w miarę istotnej potrzeby w tej pracy, powrócić do zajmowania w uniwersytecie ustalenia egzystencji i potrzebności prywatnego przedsiębiorstwa uprawianej przez się gałęzi nauki. –

Lby zasady wychodzą, przedstawiać nam fakultetowi się niejednokrotnie wyjątkiem numerów do wziętych na to docentów na profesorów nadzwyczajnych. –

Tu sama zasada powoduje siebie do przedłożenia przedmiotom swoim

Excerpt in Polish from Puzyna's file – *The growth of all branches of knowledge results in the need to continuously increase research forces of universities, which as the centers of science, are to fulfill more and more extensive tasks.*

Jan Rajewski (1857–1906) was born in Balicze Podgórskie, initially studied at secondary school in Drohobycz, then in Lvov. In 1875–1879 he studied at the Faculty of Philosophy of the Lvov University. He was a certified secondary school teacher of mathematics and physics (1882). In 1884 he received his doctorate at the Lvov University on the basis of dissertation *O całkowaniu równań różniczkowych liniowych rzędu drugiego* [On integrating linear differential equations of the second order]. In 1884–1885 academic year he was an assistant in the Physics Department of Polytechnic School in Lvov. In the period of 1883–1890 he was a teacher of secondary schools in Lvov (II and IV gymnasium) in 1890 in Stanisławów. Then for 10 years, until 1900, he taught at the industrial School in Cracow (with the Rights of the secondary school), and from 1900 until his death in 1906 he was an associate professor of mathematics at the Lvov University.

He published several works on differential equations: *O całkach nieregularnych eównań różniczkowych liniowych* (1890) [About the irregular integrals of linear differential equations], *O pewnych całkoach określonych* (1890) [On some definite integrals], *O funkcjach hypergeometrycznych rzędu wyższego i ich przekształceniach* (1901) [A higher-order hyper-geometric functions and their transformations] in the publications of the Academy of Sciences in Cracow. Thanks to the efforts of J. Puzyna he became an associate professor of mathematics at the Lvov University. He was to take the II chair of mathematics, but the Austrian authorities did not agree to its creation. In his memoirs, he appears to be a born teacher. He was buried in Lvov in the Łyczakowski cemetery.⁵⁷

Władysław Zajączkowski (1837–1898), in 1847–1853 he studied in gymnasium in Rzeszów, later in Cracow. During 1855–1859 he studied mathematics and physics at the Jagiellonian University, where in 1858–1861 he was a physics assistant at the Faculty of Philosophy. In 1861 he obtained a doctor's degree on the basis of dissertation *O stosunkach barometrycznych Krakowa* [On the barometric ratio of Cracow] (published as *O stosunkach barometrycznych Krakowa jako przyczynek do klimatologii tegoż* (1864) [On the barometric relations of Cracow as a contribution to climatology]). In the period of 1860–1862 he completed mathematical studies at Göttingen, Berlin and Vienna. In 1862 he habilitated at the Jagiellonian University with the thesis *O całkach Eurla i Fouriera* [About Euler and Fourier integrals]. There, in the period of 1862–1864 he worked as a private reader at the Department of Elementary Mathematics, lectured Differential calculus. In 1865–1867 he lectured on mathematics at the Faculty of Mathematics and Physics at the Main School in Warsaw. In 1867, in the Main School he obtained the PhD of Mathematics for the dissertation *Teorya równań różniczkowych o pochodnych cząstkowych rzędu pierwszego* [The theory of differential equations with partial derivatives of the first order].

⁵⁷ H. Wereszycka, *Jan Rajewski*, *Polski Słownik Biograficzny*, volume 30, 1987.

In the same year he became Professor and the Head of the Department of Analytical Mechanics, which he held until the end of existence of Main School (1869). Then till 1872 he lectured at the Imperial University of Warsaw (formed in place of the Main School) and then became a full professor of the I Chair of Mathematics at the University of Technology in Lvov. Since 1881 he was a private reader at the Lvov University. He published works on the theory of functions, differential equations, determinants, in Polish and German journals. The main field of his interests were differential equations. The main results he obtained were in studies of solutions of singular ordinary differential equations. For example, in the work, *Przyczynek do nauki ocałkowania równań różniczkowych liniowych rzędu drugiego* [A Contribution to the study of integrating linear differential equations of the second order]⁵⁸ he considered the relations between the general solutions and the singular solution. He used Lagrange's and Morgan's methods in his research on the equations of nth-order. In *O całkowaniu pewnego układu równań różniczkowych o różniczkach zupełnych* [Integrating certain systems of differential equations with complete differentials]⁵⁹ he clarified the results of Jacobi and Darboux. Zajączkowski's important work was: *O pewnym kształcie układów równań różniczkowych o różniczkach zupełnych* [On some form of differential equations with complete differentials]⁶⁰. It was the first extensive work in the Polish language that made more accessible the so-called Fuchs class of linear differential equations of the second order form: $w''(z) + p(z)w'(z) + q(z)w(z) = 0$. Zajączkowski's bibliography of works and his monograph in differential equations was presented by J. Koroński.⁶¹ Their publication took place in different annexations and in journals of societies operating outside Polish territory.

Since 1872 he was a member correspondent, and since 1891 an active member of the Academy of Science in Cracow. He worked in the examination board for teachers of real schools and gymnasia. In the period 1878/9 and 1885/6 he was the Rector of the Polytechnic School in Lvov, while in the period 1886–1891 – a member of the National School Board. He was also the author of *Zasady algebry wyższej* (Lvov, 1881) [Principles of higher algebra] and of the textbook *Początki arytmetyki na 4. niższe klasy szkół średnich* (Lvov, 1891) [The beginnings of arithmetic for 4 lower classes of secondary school].

⁵⁸ Rozprawy i Sprawozdania Akademii Umiejętności, 15(1887), pp. 36–43.

⁵⁹ Prace Matematyczno-Fizyczne, 1(1888), pp. 78–80.

⁶⁰ Bulletin Akademii Umiejętności, 1891.

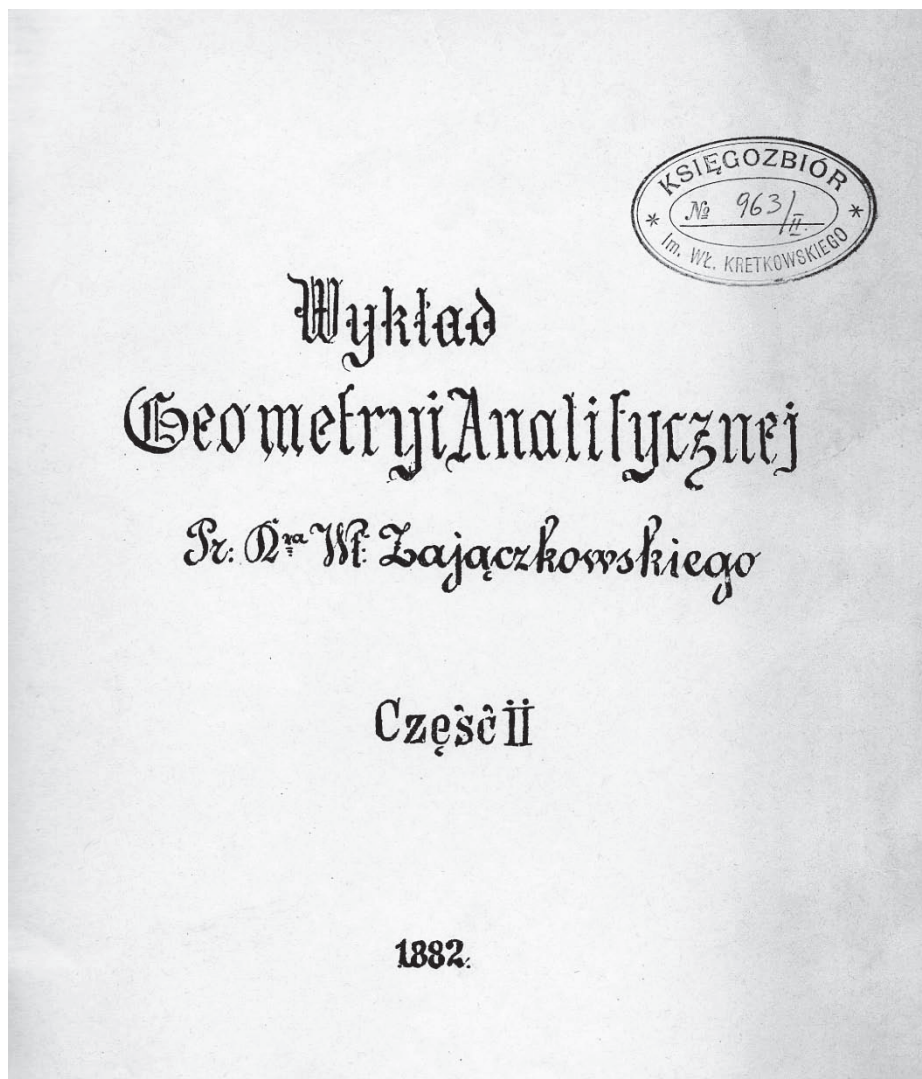
⁶¹ Jan Koroński, *Władysław Zajączkowski (1837–1898) i jego monografia z równań różniczkowych*, *Antiquitates Mathematicae* 3(2009), pp. 47–64.

Wykład
Geometrii Analitycznej.
Prof. Dr Wł. Zajączkowskiego

Część I.



1889.



The cover page from the lectures on analytic geometry 1882 (from the Library of the Faculty of Mathematics and Computer Science, Jagiellonian University, Kretkowski's Collection)

Władysław Kretkowski – a colorful character, a patron of mathematics. He studied in Paris at the School of Roads and Bridges, and at Sorbonne. In 1879, he became a reader of mathematics at the Polytechnical School, in 1881 – reader of mathematics at the Lvov University. He published in Polish and French journals in the field of analysis and algebra. The most famous and appreciated Kretkowski's works are *Krótkie wiadomości o wyznacznikach* (Paris 1870)

[Short information on determinants]⁶², published as an addition to Władysław Folkierski's textbook – *Zasady rachunku różniczkowego i całkowego* [Principles of differential and integral calculus], I vol. Władysław Kretkowski was an honoured person in the field of mathematics in Poland, among other things he left a valuable collection of books, which is located in the Library of the Faculty of Mathematics and Computer Science of the Jagiellonian University. The II Department of Mathematics at the Jagiellonian University was created thanks to his donation.

An unusual case of withdrawing the teaching authorization at the Lvov University is associated with Kretkowski, at his request. This case divided the philosophical faculties of universities in Lvov and Cracow. Briefly speaking, in Lvov they did not want to accept Kretkowski's doctoral degree obtained in Cracow.

Lwów, 21 listopada. Ciekawy fakt zaszedł na uniwersytecie tutejszym. Dr. K. chciał się habilitować na docenta i w tym celu złożył swoją pracę habilitacyjną. Fakultet filozoficzny zakwestyjonował przedewszystkiem doktorat p. K., który otrzymał od wszechniczy krakowskiej, a to podobno z tego powodu, że p. K przy doktoryzowaniu się we Lwowie niedostatecznie miał być przygotowanym, słowem, ipadł przy egzaminie, a udawszy się do Krakowa

⁶² It is worth noting that the theory of determinants, in which undoubtedly Kretkowski was a specialist, first was presented in the Polish language in Tytus Babczyński's lectures in 1865 in the lithographed course of Higher Algebra according to professor Babczyński lecture at the Warsaw Main School. The course contained a separate chapter about determinants, pp. 289–320.

Another presentation was by W. Zajączkowski, who in 1866 still as a professor of the Warsaw Main School in the lithographed course Analytical geometry included a chapter on determinants (he used this term in brackets – determinants), pp. 1972–1988. Only in 1870 did W. Kretkowski present a short thesis on determinants. A year later Żmurko's work University course in the study of determinants, appeared in the Memoirs of Society of Sciences in Paris (published by the Society of Sciences in Paris, as a part of the Kórnik Library), M. A. Baraniecki introduced them in 1879, H. G. Niewęglowski presented the chapter on determinants within the Elementary Algebra the same year in Paris.

A. Żelewski published Study of determinants with applications. Cracow, ed. I, 1877 ed. II, 1881). So the dispute concerning Kretkowski's habilitation was relevant and well-founded, and shaped a professional approach to obtaining scientific degrees. On the other hand the research and teaching trends influencing the Polish mathematics from east and west can be seen. Baraniecki reviewed the last mentioned item of Żelewski in Jahrbuch über die Fortschritte der Mathematik in 1877.

na uniwersytecie tamtejszym otrzymał stopień doktorski. Rzecz oparła się o ministerstwo, to jednak poleciło fakultetowi filozoficznemu lwowskiemu sprawę tę we właściwym zakresie rozstrzygnąć, oceniwszy jednakowoż pracę habilitacyjną kandydata. Referentem tej pracy został dr. Zajączkowski, prof. matematyki na tułjszej politechnice, który jest zarazem docentem wszechnicy, a jak wiadomo, uznana powagą na polu umiejętności matematycznych. Dr. Zajączkowski uznał pracę p. K. jako bardzo dobrą. Mimo to fakultet filozoficzny odzweił ją, a nadto nie uznał stopnia doktorskiego p. K. Ze sfer uniwersyteckich dowiaduję się, że prof. Zajączkowski zrezygnował z docentury na wszechnicy, uważając tę uchwałę jako pewnego rodzaju wyraz nieufności dla siebie, przedewszystkiem zaś dlatego, że uchwałą tą fakultet filozoficzny lwowski ubliżył w wysokim stopniu wszechnicy krakowskiej, która stopień doktorski p. K. przyznała. Ze zaś dr. Zajączkowski podobno także doktoryzował się w Krakowie, tym więcej ma się czuć dotkniętym.

Być może, że nie jestem zupełnie dokładnie poinformowany o całym przebiegu sprawy, mimo to sam fakt nie przestaje być interesującym, że doktorat uzyskany ze wszechnicy krakowskiej, nie ma we Lwowie waloru.

In the newspaper New Reform, issue 23. 9. 1883, we read: Dr K. wanted a habilitation to become an assistant professor and so he submitted his habilitation dissertation.[...]. Dr Zajączkowski thought the work to be very good, but even though, the philosophy faculty rejected it and furthermore did not accept the doctor's degree. I gather from the members of academia, that dr Zajączkowski resigned from his position as an assistant professor and thought the resolution to be a kind of vote of no confidence for him. He also thought that by this decision, the Lvov philosophy faculty was highly insulting to Cracow's school, which awarded dr K. with the title. And because dr Zajączkowski also got a degree in Cracow, he felt even more insulted.

Yego Ksceleucyja Dow Minister wy-
 xnanii i Siviati, oznajmit reskryptom ze
 dnia 16^o listopada 1883 l. 20086, że dowie-
 szenie o rezygnacji Władysława Kretkow-
 skiego z Adwokatów mił wem legendi na
 Wydziale filozoficznym Uniwersytetu Lwow-
 skiego furzymje do wiadomości i uznaje
 teni s fudare fronyixa jako ostatecznie
 salutarionu.

The Minister of Religion and Education announced in a rescript of 16 November 1883 that he accepted the information about withdrawal of the teaching right of W. Kretkowski as a fact.

Kretkowski, acting through the Academy of Sciences, funded scholarships for young mathematicians, financed international and national competitions for mathematical works, which were announced by the Academy, as well as universities in Cracow and Lvov, and Lvov Polytechnic.

The history of one of the contests announced by Kretkowski is interesting. In 1882 Kretkowski set a task, and the Academy of Arts announced a contest. The task was: *Given two tetrahedra of equal volume, cut, if it can be done, one of them with planes into the least possible number of pieces so that by appropriately combining these pieces one could build a second tetrahedron. If it could not be realized or was possible only under certain restrictions, prove the impossibility or specify the restrictions.* The prize was 500 francs in gold. The solution of this task *under certain restrictions* was provided by Ludwik A. Birkenmajer. It was not published, only a summary of the solutions was presented in *Theses and Reports of the Meetings of the Faculty of Mathematics – Physics Academy of Sciences*⁶³. The content of the task is the III problem of Hilbert put in 1900 in Paris. Birkenmajer gave a partial solution to the problem of Kretkowski 17 years before M. Dehn solved Hilbert's problem. The manuscript (not published until today) was not introduced to a broader audience of mathematicians.

In his testament Kretkowski gave Academy of Sciences in Cracow a fortune of approximately 400 000 crowns for the purpose of establishing new university

⁶³ *Rozprawy i Sprawozdania z Posiedzeń Wydziału Matematyczno-Fizycznego Akademii Umiejętności*, 88(1884), pp. XC–XCII.

lectures in mathematics and a scholarship fund for young mathematicians. Jagiellonian University used Kretkowski's fund to launch new lectures and create a third chair of mathematics. Among others, Antoni Hoborski and Franciszek Leja benefited from the scholarships from Kretkowski's fund. Rector's Reports of the Jagiellonian University from the early twentieth century almost every year mention Kretkowski as a donor. A book collection of about 2,000 volumes bequeathed by Kretkowski is in the Library of the Faculty of Mathematics and Computer Science at the Jagiellonian University.

<i>Turyrn 7: Teoria funkcji analitycznych. Tom I Lwów 1898.</i>	1
<i>" " " Tom II Lwów 1900.</i>	1
<i>Méray Ch.: Leçons Nouvelles sur l'analyse infinitésimale Tom I. Paris 1894</i>	1
<i>" " " Tom II Paris 1895</i>	1

Excerpt of inventory of the Kretkowski's collection

Stanisław Kępiński (1867–1908)⁶⁴ was born on November 11th in Bochnia, 1867, where he attended the first gymnasium classes. He was further educated in the third gymnasium in Cracow. He passed the school final exam in 1885. During 1885–1889 he studied mathematics and physics at the Philosophy Faculty of

⁶⁴ See S. Domoradzki, *Funkcje automorficzne w pracach Stanisława Kępińskiego (1867–1908)* [Automorphic functions in papers of Stanisław Kępiński (1867–1908)], *Opuscula Mathematica* 13(1993), pp. 143–149.

the Jagiellonian University. Franciszek Karlinski and Marian Baraniecki were then professors of mathematics and astronomy. The latter supervised the first scientific steps of Kępiński. The result was the work in geometry, *Właściwości szczególnych punktów trójkąta* [Properties of specific points of the triangle] (Prace Matematyczno-Fizyczne, Volume II, 1899). In 1890, Kępiński passed the exam for a teacher of mathematics in gymnasia and real schools with the Cracow Examining Board. A year later, he presented a dissertation *O całkowaniu równań różniczkowych cząstkowych rzędu 2-go* [On the integration of partial differential equations of the second order] and on that basis he received a doctorate in philosophy at Jagiellonian University at the Philosophy Faculty. In the same year he won a scholarship awarded by the Academic Senate of the Jagiellonian University from the Klimowski foundation. He went to Göttingen, where he spent three semesters attending lectures of F. Klein, Karl Hermann Schwarz and Henrich Weber. He also participated in seminars conducted by Klein and Schwarz. In January 1893 he was in Berlin, where L. Fuchs gave him some consultations. These consultations are closely connected with Kępiński's habilitation at the Jagiellonian University. Indeed, after the short trip he presented the habilitation work *O całkach rozwiązań równań różniczkowych zwyczajnych jednorodnych rzędu 2-go* [On integrals of solutions of ordinary differential homogeneous linear equations of the 2nd order]. He habilitated at the Jagiellonian University in 1893. As reviewers, F. Karliński and M. Baraniecki, have noticed, the dissertation gave evidence of very thorough study of works of eminent mathematicians: Abel, Jacobi, Klein. Since 1893 Kępiński was a mathematics teacher at the Higher Real School in Cracow, only in 1896 was he appointed an associate professor of mathematics at the Jagiellonian University. In 1899 he held the ordinary chair of mathematics at Polytechnic School in Lvov. He lectured as a private docent at the Lvov University. In the period 1903–1904 he fulfilled rector's duties at the Polytechnic School. He died suddenly on March 24th, 1908 during holidays in Zakopane.

Kępiński's activities can be divided into two periods: Cracow and Lvov. In the first one – covering the period 1892–1899 – the subject of his interest were some sections from the theory of functions. After moving to Lvov Kępiński dealt with methods of integrating differential equations with applications in mathematical physics. First of all, he took up teaching at the Polytechnics. He believed that thorough knowledge of mathematics, useful for technical purposes, must be given to students. This knowledge should be just enough not to overload the students in relation to other skills. Kępiński attached great importance to the rigorous transfer of knowledge, realizing how much inaccuracy can be reflected in the applications. While in the Lvov region, Kępiński still published in national and international journals, among others. in *Mathematische Annalen*, *Prace Matematyczno-Fizyczne* [Mathematics-Physics Works], *Rozprawy Wydziału Matematyczno-Przyrodniczego Akademii*

Umiejętności [Discourses of the Mathematics-Natural Faculty Academy of Sciences]. These works were related to certain differential equations with given boundary conditions.⁶⁵ Kępiński was the author of the *Podręcznik równań różniczkowych ze szczególnym uwzględnieniem potrzeb techniki i fizyki* [Textbook on differential equations with particular emphasis on the needs of technology and physics]⁶⁶. Today this book is still rated as one that could be used to introduce students of mathematics to the elementary theory⁶⁷. The textbook also includes the application of different methods of differential equations to problems of applied science. Kazimierz Żorawski wrote in Kępiński's obituary⁶⁸, that in Kępiński he valued [...] not only a man of extensive knowledge, but also one that had clear views about things and people, determination and energy, or all those qualities that apart from making him a theorist, made him the man who could be useful in practical matters.

Kępiński made a contribution to the analytical theory of differential equations and automorphic functions. On May 1st, 1893 he gave a habilitation lecture at the Jagiellonian University, titled: *O automorficznych funkcjach i ich zastosowaniu w różnych dziedzinach matematyki* [On automorphic functions and their application in various fields of mathematics].

Wacław Sierpiński (1882–1969)

In 1910, the Ministry of Education in Vienna agreed to restart the Second Department of Mathematics at the Faculty of Philosophy, of the Lvov University, and Wacław Sierpiński, who started his work at the Lvov University after his habilitation in 1908 in Lvov, was responsible for its management. He completed mathematical studies at the Tzar's Warsaw University (1900–1904) with the degree of candidate of science (1904), then at the Jagiellonian University (1905–1906) he got his doctorate in 1906 based on the dissertation:

About sum of the series $\sum_{n>a}^{n\leq b} \tau(n)f(n)$, where $\tau(n)$ means the number of distributions n on the sum of squares of two integers.

⁶⁵ 1. *Integration of equation* $\frac{\partial^2 j}{\partial \xi^2} - \frac{1}{\xi} \frac{\partial j}{\partial t} = 0$, *Rozprawy Wydziału Matematyczno-Przyrodniczego AU w Krakowie* 45(1905).

2. *Über die Differentialgleichung* $\frac{\partial^2 z}{\partial x^2} + \frac{m+1}{x} \frac{\partial z}{\partial x} - \frac{n}{x} \frac{\partial z}{\partial t} = 0$, *Mathematische Annalen*, 61(1905).

3. *O drganiach poprzecznych prętów sprężystych*, *Prace Matematyczno-Fizyczne*, 16(1905).

⁶⁶ Nakładem Komisji wydawniczej Biblioteki Politechnicznej, Lwów, 1907.

⁶⁷ See A. Pelczar, *Polska historia równań różniczkowych zwyczajnych i równań różniczkowych cząstkowych rzędu pierwszego*, (typescript).

⁶⁸ K. Żorawski, Stanisław Kępiński (obituary), *Wiadomości Matematyczne*, 12(1908), pp. 161–167.

Wacław Sierpiński

urodzony w Warszawie. Przepuszczony do egzaminów
ścisłych na podstawie rozprawy p. t.: „Osumowanie
średni $\sum_{m \leq b} \tau(m) f(m)$ gdzie $\tau(m)$ oznacza liczbę rozkładów
dodatniej m na sumę kwadratów dwóch liczb całkowitej-
witych”, który był pierwszym egzaminem ścisłym z matematyki
i astronomii dnia 9 maja 1906 przed profesorami
Gnani Żorawskim, Zarembo i Rudzkiem z postępowaniem
celującym; Drugi taki egzamin z filozofii dnia
27 czerwca 1906 przed profesorami Gnani Staszew-
skim i d. Pawlickim z postępowaniem celującym. —

Promocya odbyła się dnia 28 czerwca 1906 w obec-
ności Jego Magnif. Rektora d. Prof. P. Pawlickiego, Dzieka-
na Prof. P. Żorawskiego i Promotora Prof. P. Janczewskiego: —

Żorawski

From the Archives of the Jagiellonian University (WFII-508), Sierpiński passed the exam in mathematics and astronomy on May 9th, 1906 examined by professors Żorawski, Zaremba and Rudzki with an excellent grade, and the second examination in philosophy on 27th June 1906 examined by professors and doctors Staszewski and Rev. Pawlicki with an excellent grade. Promotion took place on June 28th, 1906, in the presence of His Magnificence Rector Rev. prof. Dr Pawlicki; Dean, prof. Dr Żorawski and promoter, prof. Dr Janczewski. Żorawski signed. Let us note that Edward Glinka-Janczewski (1846–1918) was a professor of Jagiellonian University, a botanist and so only the formal promoter. Mathematical value of the dissertation could be assessed only by prof. Zaremba and prof. Żorawski and their opinions were decisive.

Fr. Zill,

Venceslaus Hierpicus bci

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Doctor
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D. Stephanus Pawlicki

Rector

Ammon Lozans

Decanus

Promotor

1

Do świetnego Główna Profesorów Wydziału Filozoficznego c. k. Uniwersytetu we Lwowie.

Mnie, podpisany uprasza na podstawie załączonych rozpraw p. t.

"O pewnym zagadnieniu z rachunku funkcji asymptotycznych. Wskazanie analityczny na pewną funkcję liczbową";
 Sur le développement de l'expression $\sum_{n=1}^{\infty} \frac{1}{n^2}$ en un produit infini"

załączonych dokumentów:

1) kopii rejestracji świadectwa z uznaniem studiów na Uniwersytecie Wszechnicy w Warszawie i uzyskania stopnia naukowego kandydata nauk matematycznych,

2) świadectwa z otrzymaniem od Uniwersytetu Warszawskiego medalu złotego za rozprawę konkursową,

3) dyplomu doktorskiego,

4) curriculum vitae,

5) prac naukowych:

"O sumowaniu szeregu $\sum_{n=1}^{n \leq x} \frac{1}{n^2}$, gdzie $\varepsilon(n)$ oznacza liczbę resztów liczby n na sumę kwadratów dwóch liczb całkowitych"

"O pewnym przypadku błędnego stosowania zasady mnożenia prawdopodobieństwa"

"O rozkładach liczb całkowitych na różnicę dwóch kwadratów"

"O pewnym twierdzeniu Cantor'a"

"O wymiernych punktach koła"

6) programu wykładów na 3 półroczu,

— o udzielenie veniae legendi z matematyki.

3-go maja 1908 roku. Dr. Wacław Sierpiński.

Application of W. Sierpiński directed to the professors staff of the Faculty of Philosophy at the Lvov University. Sierpiński asks for an admission to a habilitation procedure. He included a notarized translation of the university degree, doctorate degree, resume and list of works (personal file of Sierpiński, District Archive Lvov).

Below there is an excerpt from a letter dated 13th November 1908, in which the Minister of Religion and Education in Vienna approved a private readership in mathematics for W. Sierpiński and agreed that he lead the associate chair of mathematics after professor Rajewski.

Pan c.k. Minister wyznań i oświaty zatwierdził re-
skryptem z 24. października 1908 L.41511 uchwałą groma profes-
sorów Wydziału filozoficznego co do przypuszczenia Dra.
Wacława Franciszka Sierpińskiego do prywatnej docentury dla
matematyki na lwowskim Uniwersytecie i zgodnie z wnioskiem te-
go groma profesorów zezwolił ze względu na opróżnioną po
profesorze Rojewskim nadzwyczajną katedrę matematyki na
poruczenie Dr. Sierpińskiemu począwszy od roku szkolnego
1908/9 aż do dalszego zarządzenia wykładów matematyki w pię-
ciu godzinach tygodniowo w każdym półroczu szkolnem i Kie-
rownictwa ćwiczeniami w proseminaryum matematycznym.

(Personal file of W. Sierpiński, District Archive Lvov).

W. Sierpiński directed the II Chair of Mathematics until 1918 (with a break for internment in Russia, 1914–1917), then he moved to University of Warsaw. During the period of his activity at the Lvov University he concentrated talented young mathematicians around himself, among others Zygmunt Janiszewski (1888–1920) and Stefan Mazurkiewicz (1888–1945), who later cooperated in Warsaw. In the period from 1909 to 1914 he conducted a seminar on set theory (one of the first in the world). In 1909 he introduced a series of lectures on set theory, he was one of the first university lectures on set theory as a separate subject (see the theme of the lectures in this chapter). In Lvov he wrote: *Teoria liczb niewymiernych* (1910) [Theory of irrational numbers], *Zarys teoyi mnogości* (1912) [Outline of the set theory], *Teoria liczb* (1914) [Theory of numbers]. Many mathematicians wrote about the role played by Wacław Sierpiński in the history of Polish mathematics, among others his pupil, now a member of the Polish Academy of Sciences, A. Schinzel⁶⁹.

⁶⁹ See A. Schinzel, *Współczesne życiorysy Polaków: Wacław Sierpiński*, Iskry, Warszawa 1976.

Dwa twierdzenia o mnogościach.

Pojęcie *mnogości* czyli *zbioru*, jak słusznie, idąc za Borelem i Baire'em, powiada P. Sierpiński „zaliczamy do pojęć pierwotnych, t. j. takich, które nie dają się określić przez inne, prostsze pojęcia“. mnogość liczb oznaczają będziemy literą E (Ensemble des nombres, Zahlenmenge).

Jeżeli niema liczby wymiernej M , która jest większa od każdej liczby mnogości E , to mnogość taką nazywamy *nieograniczoną z góry* (n. p. mnogość liczb dodatnich).

Jeżeli niema liczby wymiernej m , która jest mniejsza od każdej liczby mnogości E , to mnogość taką nazywamy *nieograniczoną z dołu* (n. p. mnogość liczb ujemnych).

Jeżeli istnieje taka liczba wymierna M , która jest większa od każdej z liczb mnogości, to mówimy, że mnogość ta jest *ograniczona z góry*, liczba zaś M jest jej *górną granicą*.

Jeżeli istnieje taka liczba wymierna m , która jest mniejsza od każdej z liczb mnogości, to mnogość ta jest *ograniczona z dołu*, a liczba m jest jej *dolną granicą*.

Granica górną mnogości liczb całkowitych ujemnych jest „ -1 “, a granicą dolną tej mnogości jest liczba „ $+1$ “, jeżeli nie

From the point of view at the mathematical culture it is worth quoting a fragment of L. Hordyński's⁷⁰ work from 1913: *Rightly following Borel and Baire, says Mr Sierpiński “we include the notion of a set among primitive concepts, namely those that cannot be determined by other, simpler concepts.” We will denote the set of numbers by the letter E (Ensemble des nombres, Zahlenmenge).* Hordyński's work was an evidence of the growing interest in set theory.

Zygmunt Janiszewski (1888–1920)

On July 10th, 1913 Zygmunt Janiszewski got a nomination for the post of an assistant in the “ordinary chair of mathematics of professor Józef Puzyna for the period from October 1st, 1913 to September 30th, 1915. “In the same document we can read that the number of professors (faculty council) at the meeting on July 11th, 1913 granted him *veniam legendi* – the right to teach mathematics at the Lvov University. Then, the same council applied to the Ministry of Religion and Enlightenment in Vienna for his employment. Assistant's salary amounted to 1000 crowns per year. Below we present a list of Z. Janiszewski's works from 1914, written by himself:

⁷⁰ *Podstawowe twierdzenia rachunku całkowitego, Sprawozdania Dyrekcji c.k. II Szkoły Realnej we Lwowie za r. sz. 1912/13.*

Prace naukowe:

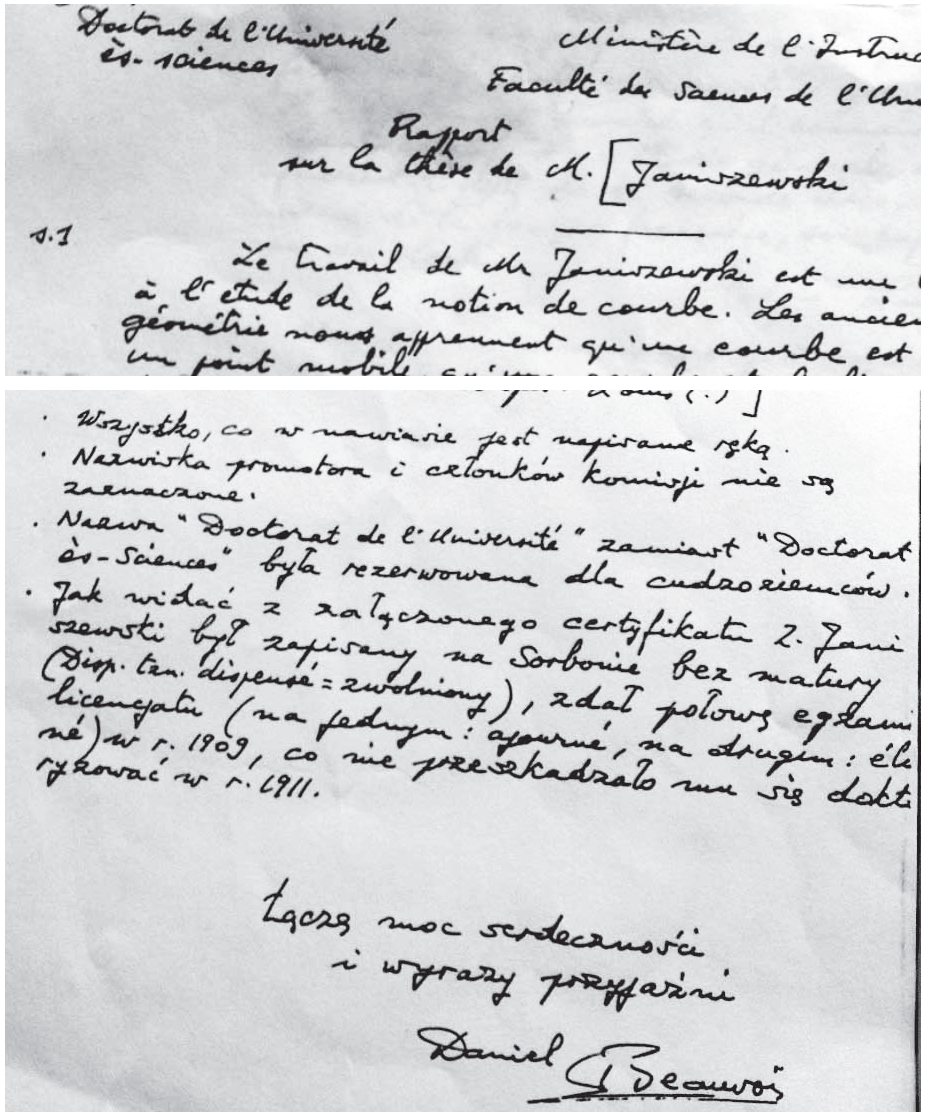
- Contribution à la géométrie des courbes planes générales.* 1910.
À propos de certains de géométrie. 1910.
Sur les lignes catoptriques. 1910.
- Sur les continus irréductibles entre deux points.* 1911. (*W Comptes rendus de l'Académie des Sciences de Paris*)
- Sur les continus irréductibles entre deux points.* 1911. Thèse.
- Démonstration d'une propriété des continus irréductibles entre deux points.* 1912.
- Über die Begriffe „Linie“ und „Fläche“.* / *International Congress of Mathematicians, London* 1912.
- O rozciąganiu płaszczyzny przez kontinua.* 1913.

Z. Janiszewski

Lwów, 15/11 1914.

(District Archive, Lvov, personal file of Janiszewski)

Let us note that Z. Janiszewski was born in July 12, 1888 in Warsaw. He passed his school final exam in the Real School in Lvov. It authorized him to study at technical programmes of studies in the Austro-Hungarian Empire. He studied abroad, in winter term 1907–1908 at the Polytechnics in Zurich, then he studied at Göttingen University (summer term 1908), in Paris (academic year 1908–1909), Munich (1909/10, winter term), in Göttingen (summer term 1910), Paris (1910/11 academic year), in Strasburg (summer term 1912), Graz (summer term 1913). He received his doctorate degree on the basis of the work: *Sur les continus irréductibles entre deux points*. Professor Daniel Beauvois from Paris, a member of the Polish Academy of Sciences, the author of monograph about the Vilnius University was gracious and copied at the National Archives of France *Rapport sur la thèse de de M. Janiszewski*. So Janiszewski received the title of “Doctorat de l’Université”, which was largely reserved for foreigners. The documents show that Janiszewski passed half of the undergraduate exams in the first and second year, which was not an obstacle to getting his doctorate in 1911. The promotion took place on June 17th of that year.



Copied from National Archives of France, together with notes on the names of doctorates prof. D. Beauvois.

Janiszewski tried to get recognition of that diploma in Lvov, first time at the end of 1914 (the application letter is missing), the second letter about recognition was from June 1916, then in 1917 came a positive letter closing the matter of recognition. Before coming to Lvov in 1911/12 academic year he lectured on *Analysis situs* and philosophy of mathematics at the Society of Academic

Courses – a kind of informal Polish university in Warsaw (Tsar University and Polytechnics functioned at that time), and in Lvov: The theory of analytic functions, (1914, summer term, 3 hours per week), Functional Calculus (2 hours per week).

Lecture topics were translated into German (see below).

32

matematyczne wypełnienie (z kartki)

Wyniały filozoficzny

Dr. p. w. n.
prof. Dr. Zygmunt Janiszewski

Półroczcie letnie r. ul. 1914.

zamierza wykład w tem półroczu:

(Ciekawoty tytuł wykładu z oznaczeniem godzin, dat i wskazaniem sali)

(Ciekawoty tytuł wykładu przełożony na niemiecki)

1. Teoria funkcji analitycznych, 2g.; poniedziałek, środa, piątek, 10-11 w sali Instytutu fizycznego	1. Theorie der analytischen Funktionen, 2 Stunden, Mon., Mitt., Freitag, 10-11
2. Rachunek funkcyjny, 2g.; poniedziałek, środa, 12-1, w sali Instytutu fizycznego	2. Funktionalrechnung, 2 Stunden
3.	3.

Odbyte studia: *Natura i roboty realnej we Lwowie — 1907.*
Studia uniwersyteckie: semestr zimowy 1907/8 — w Lwowie
 — „ — letni 1908 — w Gießenie
 rok szkolny 1908/9 — w Paryżu
 semestr zimowy 1909/10 — w Monachium
 — „ — letni 1910 — w Gießenie
 rok szkolny 1910/11 — w Paryżu
 semestr letni 1912 — w Marburgu
 semestr letni 1913 — w Gießenie

Doktor *Uniwersytetu paryskiego*
 promowany dnia *17 czerwca 1911 w Paryżu*
 ewentualna nostryfikacja

Habilitowany z *matematyki*
 na *filozoficznym* Fakultecie *uniwersytetu we Lwowie*
 Zatwierdzony Rozp. M. W. i O. z 7. 5. marca 1914, l. 1348.

Praca zawodowa przed uzyskaniem profesury:
Plato wykłady na Kursach Naukowych Towarzystwa Kursów Naukowych
w Warszawie, w r. 1911/2, a mianowicie:
Analysis situs
Filozofia matematyki.

From the District Archives in Lvov, personal file of Janiszewski.

Prace naukowe:

Contribution à la géométrie des courbes planes générales. 1910.
Prace z dziedziny geometrii; 1910.
Sur les lignes cantoriennes; 1910.
Sur les continus irréductibles entre deux points. 1911. (N Comptes rendus de l'Ac. des Sciences Paris)
Sur les continus irréductibles entre deux points. 1911. Thèse.
Démonstration d'une propriété des continus irréductibles entre deux points. 1912.
Über die Begriffe „Linie“ und „Stück“. / International Congress of Mathematicians, London 1912.
O rozciskaniu przestrzeni przez kontinua. 1913.

Lwów, 15/10 1914.

Z. Janiszewski

List of works written by Janiszewski to obtain the right to teach.

Political incidents influence the human's fate, in such a case on 30th August 1914 Zygmunt Janiszewski joined the Polish Legions (he was not getting a salary at the time). According to Z. Janiszewski's personal file⁷¹ c.k. Regency in Białá asked whether Janiszewski had returned from the Legions, and had already taken the job. Philosophy Faculty asked the Rector of the Lvov University in October 1916 to recall Janiszewski – Legion sergeant for the academic year 1916–1917, so he could give lectures in place of an interneé Waclaw Sierpiński. At a time when Janiszewski and Sierpiński did not lecture and only Puzyna did, only one seminar functioned. In the Legions Janiszewski refused to swear loyalty to the Austrian Government. In the personal file we also find the appointment to the position of assistant for the years 1917–1919 with a letter to the c.k. Regency in Lvov with a request to approve the application by the Ministry of Religious Affairs and Education in Vienna and to assign the money for salaries. In 1918 Janiszewski became a professor at the University of Warsaw.

Janiszewski in the article *O potrzebach matematyki w Polsce* [On the needs of mathematics in Poland]⁷² suggested “to get independent position for Polish mathematics”. As R. Duda⁷³ mentioned, today we are still under impression of the depth and originality of Janiszewski's vision, who chose set theory and its applications as the chosen area of mathematics, who could create an atmosphere of teamwork, to set up a specialized journal – *Fundamenta Mathematicae*, the

⁷¹ District Archive Lvov,

⁷² In: *Nauka Polska, jej potrzeby, organizacja i rozwój*, Warszawa 1917. See: *Wiadomości Matematyczne* 7(1963), pp. 146–155.

⁷³ Status and perspectives of mathematics in Poland.

first issue of which appeared in 1920. It is worth noting that the chosen topic related to set theory was the area of interest of the Lvov group, among others Sierpiński, Janiszewski, Mazurkiewicz, and then Ruziewicz.

Hugo Dyonizy Steinhaus (1887–1972)

Steinhaus was connected with the Lvov University for a short time in the period of Galician autonomy we are interested in. He was a student in the years 1905/06 and a Privatdozent in 1917–1919. He was there for over a year and it was in a complex wartime and postwar situation. Steinhaus school years are presented in Chapter I.

In 1905, Steinhaus registered at Faculty of Philosophy in Lvov, trying to get education in mathematics and proper philosophy. In philosophy he registered in the lectures of Twardowski, a man who was extraordinarily popular among students, and professor Mściśław Wartenberg, who lectured on Kant's Metaphysics and antinomy in 1905/1906 academic year. From mathematics, he attended the lectures of Józef Puzyna. He also participated in the seminar in the methodology of social sciences of Stanisław Grabski (1871–1949, a politician and a brother of Władysław who was later twice the Prime Minister of the II Republic). He also decided to study sociology, to this end he borrowed *Division du Travail* by Emile Durkheim from the university library.

In the first year of studies he devoted his time exclusively to studying. All entertainment was limited to a minimum. He did not play cards like his fellow students, he did not like alcohol, and to dance he applied the maxim *nemo saltat sobrius nisi forte insanit*. In spring 1906 after the visit of Stanislaus Jolles, the professor of descriptive geometry in Charlottenburg, Steinhaus went to Göttingen to study mathematics, which he began in the autumn of that year. He lived in the building next to the University at 82 Weedenstrasse Street. Steinhaus gave up philosophy for applied mathematics which included descriptive geometry, mechanics, graphostatics, numerical calculus and surveying. As a second subject he chose astronomy, where, together with Felicjan Kępiński⁷⁴ he attended classes at the observatory.

Göttingen was the center where many celebrities were involved in the various areas of mathematics. Steinhaus was keen to keep contact with people and cooperate with them. He used the peer support of Dziewulski brothers, Edward Loth, Antoni Łomnicki, Felicjan Kępiński, Kazimierz Jantzen, Leon Chwistek, Włodzimierz Stożek, Zygmunt Janiszewski, Stefan Mazurkiewicz⁷⁵ and others

⁷⁴ Felicjan Kępiński (1885–1966) – Polish astronomer, since 1927 Professor of the Warsaw Polytechnic, founder of the observatory and its manager in the period 1925–1955.

⁷⁵ Brothers Dziewulski – Władysław and Waclaw, Edward Karol Loth (1884–1944) – anatomist and anthropologist, professor at the Warsaw University, member of the Polish Academy of Sciences, Antoni Marian Łomnicki (1881–1941) – Professor of Mathematics at the Lvov Polytechnics, Banach started his academic career at him, Kazimierz Jantzen (1885–1940) –

(an impressive number of Polish people involved later in mathematics). His most important activity, however, was reading in the mathematical reading room, where he spent many hours. In 1910 he moved for the summer term to Munich, where he attended Pringsheim's lectures on mathematics and Seeligner's on astronomy. He returned to Jasło on holidays. In the academic year 1910/1911 – his last period in Göttingen – he got a doctorate degree in philosophy on the basis of the work *Neue Anwendungen des Dirichlet'schen Prinzips*. He studied under the supervision of many celebrities, let's name some of his professors: Hilbert, Minkowski, Toeplitz, Zermelo⁷⁶. Albert Michelson⁷⁷ then offered that Steinhaus go to Chicago as a math assistant, but Steinhaus, however, did not find this proposition interesting.

After visiting Switzerland and Italy he traveled to Cracow where XI Polish Convention of Naturalists and Physicians took place. He made a speech there in the section of mathematics. Then he went to Jasło, where he was enlisted for military service. He was assigned to the fortress artillery regiment No. 5 named after Freiherr von Rouvroj, whose barracks were located in Cracow on Montelupich Street, no. 39. As Steinhaus admitted himself, he was not fond of military life, after numerous medical examinations he got a certificate of incapability for military service. Then he went to Lvov for a few months, where he met Stanisław Ruziewicz. During this period he began writing the work on trigonometric series, which were later presented by Sierpiński for publication in the *Reports of the Scientific Society of Warsaw*.

During this period, Steinhaus was a private scientist, as he called himself, he recalled: *the life of private scientist, with tennis and rowing on the Vistula River, would be boring, if not for the general history*. It should be mentioned here that he joined the rowing section of AZS (Academia Sports Society). In the next year he lived in Cracow for some time. There he wrote four works on the theory of Fourier series, which appeared later in 1913 in the Bulletin of the Academy of Sciences. In these works he gave the example of an everywhere divergent trigonometric series with terms tending to zero, used this series to solve the Luzin and Sierpinski problem, which concerned the application of a power series convergent in a certain arc of the circle in the complex plane and

astronomer, meteorologist, mathematician, professor of the Vilnius University, Leon Chwistek (1884–1944) – logic, Professor UJK, painter, philosopher, art theorist, one of mathematics of the Lvov-Warsaw school, Włodzimierz Stożek (1883–1941) – mathematician working at the Lvov Polytechnics, Zygmunt Janiszewski (1888–1920) – mathematician, Stefan Mazurkiewicz (1888–1945) – mathematician.

⁷⁶ See A. Dawidowiczowa, *Pamiętki rodzinne*, in *XII Szkoła Historia Matematyki*, ed. S. Domoradzki, Z. Pawlikowska-Brożek, D. Węglowska, Wydział Matematyki Stosowanej AGH, Cracow, pp. 238–243.

⁷⁷ Albert Michelson – (1852–1931) – American physicist born in Strzelno, winner of the Nobel Prize for Physics in 1907 for the design of the interferometer.

divergent in another. At that time he and his family travelled a lot. In 1913 he went to Italy, then to France. After some time his parents returned to the country.

In spring 1914 he went back with his family to Bereszow in Hungary, this time due to unstable political situation. Then he himself moved to Cracow, where he lived with his friend. He went to the recruiting office, where he was assigned to the Military Department NKN. Soon, however, together with the Department he moved to Vienna where he was assigned to the chairman's office for the position of NKN language interpreter.

After some time, however, he reached Jezowe, where an artillery regiment of the first Polish Legions – Volynia Campaign – stationed, and where he reported.

After he had gone to Cracow for the funeral of his cousin at the end of September 1915, he did not return to the legions. He took a job at the Headquarters of the National Reconstruction in Cracow. There, quite by chance, he met Stefan Banach. As he mentioned this fact – *“during this walk I heard the words “... Lebesgue measure ...” – I went to the bench and introduced myself to two young students of mathematics. They told me that their companion was also Witold Wilkosz, who was highly praised. They were Stefan Banach and Otto Nikodym. Since then, we met regularly, and because of the fact that Władysław Ślebodziński, Leon Chwistek, and Jan Króo and Władysław Stożek were in Cracow, we decided to start a Mathematical Society”*.

In March 1917, Steinhaus went to Lvov to give his habilitation lecture at the Lvov University, after which he obtained his *veniam legendi*.

Then he obtained a transfer from the Cracow headquarters to the Agency in Lvov. After three weeks, however, he decided to return to Jasło; on the basis of other documents he obtained a pass. On July 2nd a ceasefire was announced, Steinhaus in consultation with the famous actor Dante-Baranowski went to Żółkwia. Then he went to Rawa Ruska, from where he got into Jarosław, then to Rzeszów, and from there finally to Jasło. From that time until 1920 he was in Jasło. He was not called up to the military service and as a result of the unstable political situation, which prevented the activity at the Lvov University, he tried to get a job at the gas pipelines of company *Gartenbarg, Waterkeyn and Karpaty*, which connected the coal mines Męcinki near Krosno across Jasło with refinery in Glinnik Marianpolski near Gorlice. There he worked as a mathematical expert. Soon he gave up this work and returned to Lvov University. But it was a difficult and complex period of the free Poland, successes of Lvov School of Mathematics, magazines *Studia Mathematica*, publishing, *Mathematical Monographs*, congresses, conferences, ...

Imię i nazwisko: Hugo Steinhaus dr. in. i Honor. Sc.

Urodzony dnia 14 stycznia 1887 w Jasle.

Odbyte studia: po ukończeniu s.b. gimnazjum w Jasle studia z zakresku filozofii i matematyki na uniwersytecie lwowskim w r. 1905/6, potem z matematyki na uniwersytecie getyngenskim (1906-1911), monachijskim (1910) i prажmim (1912)

Doktor fil. uniwersytetu getyngenskiego
 promowany dnia 10 maja 1911. w Getyndze
 ewentualna nostryfikacja 7 sierpnia 1917 przez uniwersytet lwowski za zgodą władz c.k. Ministerstwa Edukacji z 7 lipca 1917 l. 20.466.

Habilitowany z matematyki
 na filozoficznym Fakultecie Uniwersytetu we Lwowie
 Zatwierdzony Rozp. M. W. i O. z 7 lipca 1917 l. 20.466.

Fragment of Steinhaus CV (District Archive Lvov), on August 7, 1917 Göttingen diploma was recognized by the Lvov University with the permission of c.k. Ministry of Education in Vienna on July 7, 1917.

Prace naukowe: "Der Begriff der Grenze" Math. Ann. Bd. 71. - 1911.
"Neue Anwendungen des Dirichlet'schen Prinzips" (Glossaria cyje Sobłowska, Historische Univ.-Büchhandlung, 1911. Göttingen.
"O szeregu trygonometrycznym rektangulów", Symeonow. Tow. Nauk. Warsz. Rch I, tom 3. - 1912.
"Sur le développement du produit de deux fonctions en une série de Fourier". Bull. Ac. Sc. Cracovie, Mars 1913.
"Sur la convergence non uniforme des séries de Fourier"
Bull. Ac. Sc. Cracovie, Avril, 1913.
"Sur une fonction remarquable représentée par une série de Fourier". Bull. Ac. Sc. Cracovie, Juin 1913.
"Sur un problème de M. Lévin et Szegő"
Bull. Ac. Sc. Cracovie, Juillet, 1913.
"Nichtlineare unendliche trigonometrische Fouriersreihen". W Krakowie, realit. Akad. Um. 1916. (Dopiero habilitacyjny). — i inne,

Continuation of Steinhaus CV – handwritten list of his scientific works.

DEKANAT WYDZIAŁU FILOZOFICZNEGO
 C.K. UNIWERSYTETU LWOWSKIEGO Lwów, 24. lipca 1917.
 L: 1057 ex 1916/17

D o

Wielmożnego Pana

Dr. Hugona STEINHAUSA

w
KRAKOWIE
Kamelioka 9.
"Bristol"

Pan Minister Wyznań i Oświaty reskryptem z dnia 7. lipca 1917 L: 20.466 zatwierdził uchwałą Gross Profesorów Wydziału filozoficznego c.k. Uniwersytetu lwowskiego, którą udzielono Wielmożnemu Panu veniam legendi z matematyki w charakterze Docenta prywatnego na tymże Wydziale, zezwalając równocześnie na nostryfikację Pańskiego dyplomu doktorskiego uzyskanego w Göttingen na tutejszym Uniwersytecie.

O tej decyzji mam zaszczyt zawiadomić WPana z uprzejmą prośbą o wypełnienie załączonego wzoru tabeli osobistej i nadesłanie skiszanatowi w dwóch egzemplarzach w najkrótszym czasie.

Odbitkę dyplomu doktorskiego oraz inne załączniki podania w liczbie 11 zwraca się w załączeniu.

Z Dekanatu Wydziału filozoficznego
 c.k. Uniwersytetu lwowskiego.

24p. J. Kozłowski
 t, cz, Dziekan.

14 załączników.

Letter sent to H. Steinhaus, telling that the Minister of Religious Affairs and Education of the monarchy approved the right of teaching at the Lvov University on July 7th, 1917. The Faculty Board decided to grant "veniam legendi" without waiting for a doctoral degree recognition.

Нотификация затворенная Ружь.

Лин. 20.7.VII.917.К: 20466.

Львов 23. VII. 917.

~~Толстойко~~
Джржан.



C o p i a.

Q.F.F.F.Q.S. Auspiciis et auctoritate Augustissimi Potentissimi Principis ac Domini W I L H E L M I II. Imperatoris Germanorum Borussiae Regis Domini Nostri longe clementissimi Prorectore Academiae Georgiae Augustae Magnifico ALBERTO STIMMING philosophiae Doctore artium liberalium Magistro philologiae romanae professore publico ordinario Regi ab intimis Consiliis ordinis Regii Aquilae Rubrae Quartae Classi adscripto ego ALBERTUS PETER philosophiae Doctor artium liberalium Magister Botanicarum Professor publicus ordinarius Regi ab intimis Consiliis Societatis regiae scientiarum gottingensis sodalis ordinis Regii Aquilae Rubrae quartae classis adscriptus Ordinis philosophorum h.t. Decanus et Promotor legitime constitutus virum nobilissimum doctissimum H U G O N E M S T E I N H A U S Iasloensem qui dissertatione valde laudabili edita "Neue Anwendungen des Dirichlet'schen Prinzips" et examine die X. mensis Maii a. MCMXI superato scientiam mathematicae astronomiae mathematicae applicatae summa cum laude comprobavit die VII. mensis Augusti a. MCMXI PHILOSOPHIAE DOCTOREM ET ARTIUM LIBERALIUM MAGISTRUM creavi eiusque rei has litteras testes sigillo Ordinis philosophorum muniri iussi. L.S.

P.D. Conradus de Seelhorst. mp.

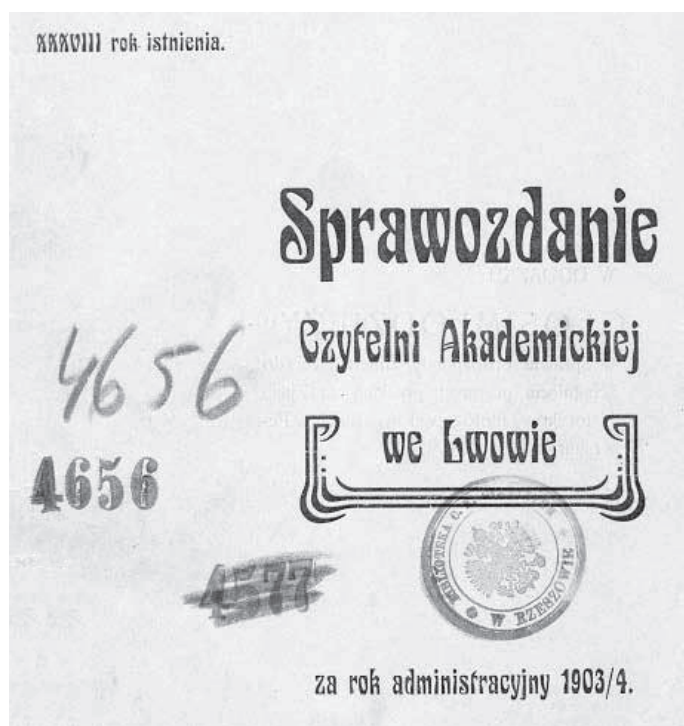
L. 44
P. K. D.

Recognition of H. Steinhaus diploma, approved in 1917, was received at the address of the Dean of Faculty.

2.6. Activities for the community

Academic reading room (mathematics and physics circle of students), common university lectures

Academic reading room functioned at the Lvov University since 1865. A professor or privatdozent of the University or the Polytechnic School could be a member of the reading room, also an ordinary or extraordinary listener of mentioned schools. Activities of Reading room were another example of the fact that professors and students were one university community. Students' mathematics and physics circle functioned within the Academic Reading room.



A part of the cover page of *Reports of Academic Reading Room in Lvov* for 1903/1904. At the meetings of Mathematical-Physics Circle were presented, among others, the principle of non-Euclidean geometry, spherical trigonometry and determinants. Among the students presenting papers we mention Ludwik Hordyński – later a known teacher and an activist of Polish Mathematical Society. There were 14 meetings of the Circle, for example, in 1903/1904 academic year 14 students participated in the meetings.

Kółko matematyczno-fizyczne. Posiedzeń Kółko odbyło się 14, mówiono na posiedzeniach:

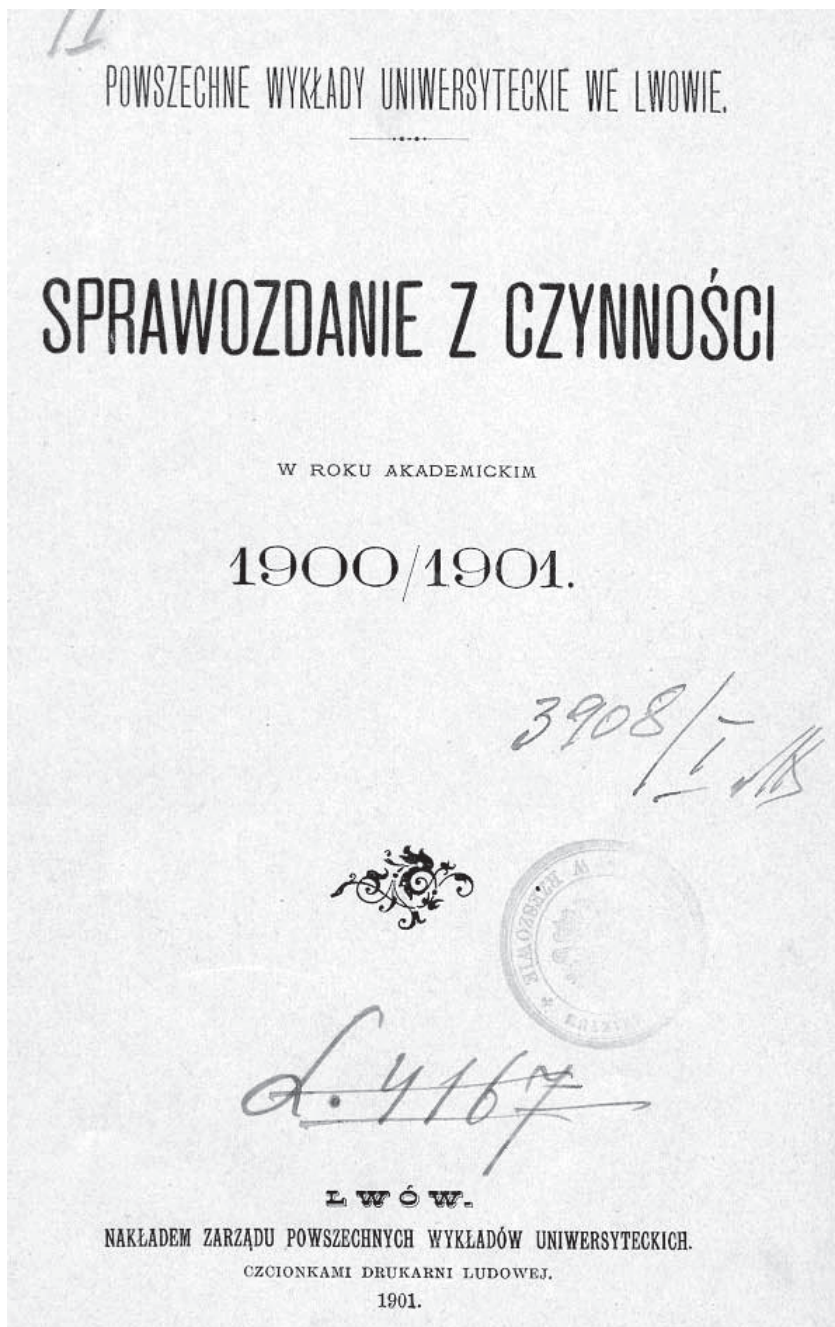
1. Kol. Stock Jan: „O energii świata“.
2. Kol. Chudoba Fr.: „Zasady geometrii nie-Euklidesowej“.
3. Kol. Sadowski E.: „Piorun a iskra elektryczna“.
4. Kol. Chudoba Fr.: „Zasady geometrii nie-Euklidesowej“ (dokończenie).
5. Czytano broszurę prof. Witkowskiego pt. „Eter“.
6. Kol. ass. Żłobicki Wł.: „Początki nauki o elektryczności w VIII kl. gimn.“
7. Kol. Szujski: „Trygometrya sferyczna“.
8. Kol. Rozwadowski: „Oświetlenie elektryczne“.
9. Kol. Stock Jan: „Elektryczność atmosferyczna“.
10. dtto (c. d.).
11. dtto (c. d.).
12. dtto (dok.).
13. Kol. Hordyński L.: „O wyznacznikach częściowo przetworzonych.“
14. dtto (dokończenie).

W posiedzeniach Kółka brało udział przeciętnie 14 kolegów. Zarząd: w zastępstwie przew. Ross sekretarz.

Topics of meetings of Mathematics-Physical Circle of 1903/1904 academic year functioned within Academic Reading Room.

The Library functioned within the Reading Room. Among other things, there was a subscription to *Wiadomości Matematyczne* [Mathematical News], edited by S. Dickstein from Warsaw. The “News” united the actions of mathematicians of three annexations and from abroad – Paris, St. Petersburg, Odessa and other parts.

Another organizational unit of the University were General University Lectures, which functioned since 1899/1900 academic year. Their goal was to bring knowledge to the society in general. The chairman of the Board of Common University Lectures at the University was a philosopher and logician, professor Kazimierz Twardowski. His lectures were very popular. This demonstrates the openness of the university, its serving role to the society. It is interesting that there was a similar number of humanity and natural sciences lectures, for example, about a hundred during two years. The greatest attention was devoted to health (39), history and legal and political science (28), literature and physics ... (28), there were 9 lectures of astronomy. There were no lectures on pure mathematics, but lectures on physics and astronomy were paramount and showed the usefulness of mathematics.



Cover page of *The reports of the activities of the Common University Lessons in Lvov* for 1900/1901 academic year.

Seminars were conducted at the Faculty of Philosophy, as well as in other departments. At the beginning of the 20th century, there were 9, including 4 with two branches. Two mathematical seminars functioned.

IV. Na Wydziale filozoficznym.

A) SEMINARIA.

1. **Seminaria historyczne.**
 - a) Oddział dla historii austr.: kierownik Prof. Dr. Finkel.
 - b) Oddział dla historii powsz.: kierownik Prof. Dr. Dembiński.
2. **Seminaryum dla filologii klasycznej.**
 - a) Oddział dla filologii łacińskiej: kier. Prof. Dr. Kruczkiewicz.
 - b) Oddział dla filologii greckiej: kierownik Prof. Dr. Witkowski.
3. **Proseminaryum dla filologii klasycznej:**
 - a) Oddział dla filologii greckiej: kier. Prof. Dr. Kruczkiewicz.
 - b) Oddział dla filologii łacińskiej: kier. Prof. Dr. Witkowski.
4. **Seminaryum dla filologii polskiej:** kierownik Prof. Dr. R. Pilat.
5. **Seminaryum dla filologii ruskiej:** kierownik Prof. Dr. Kolessa.
6. **Seminaryum germanistyczne:** kierownik Prof. Dr. Werner.
7. **Seminaryum matematyczne niższe:** kierownik Prof. Dr. Puzyna.
8. **Seminaryum matematyczne wyższe:** kierownik Prof. Dr. Puzyna.
9. **Seminaryum filozoficzne w dwóch oddziałach:** kierownik Profesor Dr. Twardowski.

Uwaga: Zapowiedziane seminaria i proseminaria są w programie wykładów szczegółowo ogłoszone.

Seminars at the Philosophy Department from 1902 to 1903, part of the University Staff and Lectures Programme. Seminar of history: the Austrian history, general history, classical philology seminar: Latin, Greek, the same divisions for pre-seminar branches of classical philology, Polish philology seminar, seminar on Ruthenian philology, German philology, Mathematical seminar, lower, Mathematical seminar, higher, lower and higher philosophical seminar.

In a conference celebrating the 350th anniversary of the Lvov University (14–15 January 2011), Przemysław M. Żukowski of the Jagiellonian University Archives in his paper mentioned the complex situation regarding nationalities of students at the Lvov University, which he recalled because of the Rector's letter: *Głabinski is a consolation for us – although the vast majority of university students during German times were Polish, despite the fact that in turbulent times 1848 the Legion was created of the academic youth and provided with*

weapons by the national government, the Polish youth was never tempted to conquer the University by violence and threats and did not listen to whispers of irresponsible warmongers. We hope that in time, all the Ruthenian young people will also come to believe that the flower of the national culture, which is the research and educational University, can be reached and kept only by completely dedicated work and sacrifice, raising the spirit to the heights of the ideals of science and humanity.

In Lvov, 1910, 23 July.

The fact that so much was achieved in the field of mathematical sciences is due to indefatigable work of the above-mentioned mathematicians – Polish professors of the University and the Polytechnic School.

2.7. Some statistics

Using statistical data of Galicia we see numbers of teachers and students of universities in Lvov and Cracow in the period 1880/81–1898/99. Let us compare 1880/81 (winter term) and 1898/99 (summer term) academic years.

A fragment of statistics

1880/81 acad. year	Professors	Associate professors	Readers	The others	Students (totally)
Cracow	37	15	21	19	756
Lvov	27	5	12	12	1066
1898/99 acad. year					
Cracow	51	23	33	55	1388
Lvov	49	14	32	44	1819

These data show a slow systematic staff development (particularly in Lvov and the growth of the number of students).

In 1869, 125 ordinary students and 30 associate students (including 26 pharmacists) studied at the Philosophical Faculty, 906 – overall at the University. In 1879, 87 ordinary and 51 associate students (including 37 pharmacists) studied at the Philosophical Faculty, overall – 1007 students at the University.⁷⁸

The number of students increased. This is clearly seen in the prepared data on the number of students, based on the printed lists of listeners (in addition to their nationalities) from the years 1881–1905 and the number of students at the University.

⁷⁸ According to *Szematyzm królestwa Galicji i Lodomeryi z wielkim księstwem Krakowskim*, Lvov 1879, Lvov 1879.

1881/1882**Winter term**

Listeners	Philosophical Faculty	Total
Altogether	152	1059
Ordinary	94	955
Associate	58	104
Native	138	1019
Foreigners	14	40

Nationalities	Philosophical Faculty	Total
Polish	95	560
Russian	44	413
German	2	4
Hungarian	–	1
Czech	–	2

1883/1884**Summer term**

Listeners	Philosophical Faculty	Total
Altogether	115	945
Ordinary	77	878
Associate	38	67
Native	110	909
Foreigners	5	36

Nationalities	Philosophical Faculty	Total
Polish	91	610
Russian	24	332
German	–	1
Hungarian	–	1
Bulgarian	–	1

1887/1888**Summer term**

Listeners	Philosophical Faculty	Total
Altogether	128	1092
Ordinary	72	1016
Associate	56	76
Native	119	1053
Foreigners	9	39

Nationalities	Philosophical Faculty	Total
1	2	3
Polish	99	688
Ruthenian	26	393

1	2	3
German	1	6
Serbian	1	1
Bulgarian	–	2
Czech	1	2

1889/1890**Summer term**

Listeners	Philosophical Faculty	Total
Altogether	145	1170
Ordinary	71	1065
Associate	74	105
Native	138	1130
Foreigners	7	40

Nationalities	Philosophical Faculty	Total
Polish	110	765
Ruthenian	34	400
German	7	4
Bulgarian	–	1

1890/1891**Summer term**

Listeners	Philosophical Faculty	Total
Altogether	172	1169
Ordinary	97	1062
Associate	75	107
Native	160	1122
Foreigners	12	47

Nationalities	Philosophical Faculty	Total
Polish	136	757
Ruthenian	35	407
German	1	3
Hungarian	–	1
Bulgarian	–	1

1892/1893**Winter Term**

Listeners	Philosophical Faculty	Total
1	2	3
Altogether	190	1275
Ordinary	109	1130
Associate	81	145

1	2	3
Native	179	1232
Foreigners	11	43

Nationalities	Philosophical Faculty	Total
Polish	143	846
Ruthenian	46	421
German	1	8

1893/1894**Summer term**

Listeners	Philosophical Faculty	Total
Altogether	160	1279
Ordinary	107	1157
Associate	53	122
Native	149	1236
Foreigners	11	43

Nationalities	Philosophical Faculty	Total
Polish	126	863
Ruthenian	34	414
German	–	2

1894/1895**Winter term**

Listeners	Philosophical Faculty	Total
Altogether	135	1455
Ordinary	98	1338
Associate	37	117
Native	126	1414
Foreigners	9	41

Nationalities	Philosophical Faculty	Total
Polish	99	1030
Ruthenian	35	420
German	–	2
Italian	–	1
Czech	1	2

1894/1895**Summer term**

Listeners	Philosophical Faculty	Total
1	2	3
Altogether	129	1413
Ordinary	94	1314

1	2	3
Associate	35	99
Native	114	1348
Foreigners	15	65

Nationalities	Philosophical Faculty	Total
Polish	101	1002
Ruthenian	28	406
German	–	5
Italian	–	–
Czech	–	–

1897/1898**Winter term**

Listeners	Philosophical Faculty	Total
Altogether	170	1722
Ordinary	76	1531
Associate	94	191
Native	151	1644
Foreigners	19	78

Nationalities	Philosophical Faculty	Total
Polish	143	1202
Ruthenian	26	510
German	1	9
Czech	–	1

1897/1898**Summer term**

Listeners	Philosophical Faculty	Total
Altogether	161	1673
Ordinary	79	1507
Associate	82	166
Native	145	1598
Foreigners	16	75

Nationalities	Philosophical Faculty	Total
Polish	136	1162
Ruthenian	24	501
German	1	6
Italian	–	–
Croatian	–	–
Czech	–	3
Bulgarian	–	1

1898/1899**Summer term**

Listeners	Philosophical Faculty	Total
Altogether	185	1819
Ordinary	117	1668
Associate	68	151
Native	171	1745
Foreigners	14	74

Nationalities	Philosophical Faculty	Total
Polish	153	1282
Ruthenian	31	524
Bulgarian	–	1
German	1	10
Croatian	–	–
Czech	–	2

1899/1900**Winter term**

Listeners	Philosophical Faculty	Total
Altogether	267	2004
Ordinary	161	1793
Associate	106	211
Native	239	1926
Foreigners	28	78

Nationalities	Philosophical Faculty	Total
Polish	213	1423
Ruthenian	52	572
Bulgarian	1	1
German	1	8
Croatian	–	–
Czech	–	–

1900/1901**Summer term**

Listeners	Philosophical Faculty	Total
Altogether	284	1972
Ordinary	194	1781
Associate	90	191
Native	272	1919
Foreigners	12	53

Nationalities	Philosophical Faculty	Total
Polish	223	1368
Ruthenian	59	595
Czech	1	1
Bulgarian	1	2
German	–	5
Hungarian	–	1

1901/1902

Winter term

Listeners	Philosophical Faculty	Total
Altogether	359	1628
Ordinary male listeners	210	1399
Ordinary female listeners	8	13
Associate male listeners	30	229
Associate female listeners	84	
Female trainees	10	
Listeners of pharmacy	17	
Native	331	1544
Foreigners	28	84

Nationalities	Philosophical Faculty	Total
Polish	341	1551
Ruthenian	14	68
Bulgarian	–	3
German	2	3
Hungarian	–	1
Czech	–	2

1901/1902

Summer term

Listeners	Philosophical Faculty	Total
Altogether	359	1630
Ordinary male listeners	221	1404
Ordinary female listeners	6	11
Associate male listeners	27	110
Associate female listeners	78	78
Female trainees	6	6
Listeners of pharmacy	21	21
Native	339	1561
Foreigners	20	69

Nationalities	Philosophical Faculty	Total
Polish	337	1458
Ruthenian	18	159
Bulgarian	–	3
German	3	4
English	–	4
Hungarian	–	1
Russian	1	1

1904/1905

Winter term

Listeners	Philosophical Faculty	Total
Altogether	988	2933
Ordinary male listeners	732	2544
Ordinary female listeners	35	45
Associate male listeners	59	180
Associate female listeners	118	118
Male trainees	–	1
Female trainees	11	12
Male listeners of pharmacy	32	32
Female listeners of pharmacy	1	1
Born in Galicia	908	2767

Nationalities	Philosophical Faculty	Total
Polish	777	2116
Ruthenian	202	792
Czech	–	2
Slovakian	1	1
Serbian and Croatian	–	1
German	7	12
Romanian	–	2
Hungarian	–	1
Without nationality	1	6

1904/1905

Summer term

Listeners	Philosophical Faculty	Total
1	2	3
Altogether	893	2732
Ordinary male listeners	686	2416
Ordinary female listeners	33	46
Associate male listeners	44	140
Associate female listeners	92	92

1	2	3
Male trainees	1	1
Female trainees	6	6
Male listeners of pharmacy	30	30
Female listeners of pharmacy	1	1
Born in Galicia	815	2568

Nationalities	Philosophical Faculty	Total
Polish	686	1955
Ruthenian	199	747
Czech	1	2
Slovakian	1	1
German	5	11
Romanian	–	1
Hungarian	–	1
Without nationality	1	14

1905/1906

Winter term

Listeners	Philosophical Faculty	Total
Altogether	1024	3249
Ordinary male listeners	779	2974
Ordinary female listeners	47	64
Associate male listeners	75	168
Associate female listeners	109	111
Male trainees	1	1
Female trainees	28	28
Male listeners of pharmacy	22	22
Female listeners of pharmacy	1	1
Born in Galicia	939	3041

Nationalities	Philosophical Faculty	Total
Polish	815	2368
Ruthenian	219	856
Czech	1	4
Slovakian	–	1
German	7	13
Hungarian	–	2
Without nationality	–	5