STUDY MODULE DESCRIPTION FORM

Name of the module/subject **History of mathematics**		Code **1010341771010349396**
Field of study **Mathematics in Technology**	Profile of study (general academic, practical) **general academic**	Year /Semester **4 / 7**
Elective path/specialty **-**	Subject offered in: **Polish**	Course (compulsory, elective) **elective**
Cycle of study: **First-cycle studies** **(Polish Qualifications Framework level six)**	Form of study (full-time,part-time) **full-time**	
No. of hours Lecture: **30** Classes: **-** Laboratory: **-** Project/seminars: **-**		No. of credits **2**
Status of the course in the study program (Basic, major, other) **other**	(university-wide, from another field) **university-wide**	
Education areas and fields of science and art **The sciences** **Mathematical sciences**		ECTS distribution (number and %) **2 100%** **2 100%**

Responsible for subject / lecturer:

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Faculty of Electrical Engineering
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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	orientation in basic mathematical conceptions and structures (sets and functions; two-valued logic and types of reasoning/proofs; limits, derivatives and integrals; vectors and matrices; algebraic and differential equations)
2	**Skills**	- domination in mathematical notions and how to use them, - effective search for didactic materials, reading in Polish and English
3	**Social competencies**	- awareness that everybody has to learn, - readiness to receive and communicate in a comprehensible manner the propagated knowledge and to use it for the benefit of society

Assumptions and objectives of the course:

deepened orientation in the stages the mathematics was developped through,
in its most accomplished achievements,
in its contribution to general culture, as well as to industrial and organizational progress

Study outcomes and reference to the educational results for a field of study

Knowledge:

After finishing the course a student has a basic knowledge necessary to understand social, ethical, economic, legal and other non-technical conditioning of engineering activities; (s)he understands the impact of social and civilizational changes on the lifestyle of society. - [K_W12 (P6S_WK)]

Skills:

After finishing the course a student is able, when formulating and solving engineering problems, to perceive their non-technical aspects, including environmental, economic and legal faces. - [K_U08 (P6S_UW)]

Social competencies:

After finishing the course a student
is aware of the level of his/her knowledge he/she uses when does research in exact and technical sciences - [K_K01 (P6S_KK)],
is able to think and act in a creative and go-ahead way, taking into account the safety, ergonomics of work and its economic aspects, is aware of the need to initiate activities for the public interest and responsibility for the team work as well as its individual participants - [K_K03 (P6S_KO)],
understands and appreciates the importance of intellectual honesty in the activities of both his/her own and other people's; he/she is ready to demonstrate reliability, fairness, professionalism and ethical attitude - [K_K04 (P6S_KR)],
is aware of his/her social role as a graduate of a technical university, he/she is ready to disseminate popular science content to the society and to identify and resolve basic problems related to the field of study - [K_K05 (P6S_KR)].

Assessment methods of study outcomes

Training methods: the lectures including interactivity (via questions addressed to students), mostly realized in a seminar way (attendees present elaborations concerning particular mathematicians, epochs and/or areas of mathematics).

a) written elaboration and oral presentation given (e.g., as ppt presentation) to the participants of the course,

b) test in subjects covered by lectures (the presentation is essentially included).

Course description

There is presented the timeline of mathematics (but the geopgraphical and thematical aspects are also taken into consideration):

1. Middle East (Babylonia and ancient Egypt) and Far East (India and China).
2. Ancient Greece (Thales of Miletus, Pihtagoras of Samos, Eudoxos of Knidos, Plato, Menechemus, Arystarch of Samos, Archimedes, Arystoteles, Euclid, Erathosteles of Syrene, Nicomedes, Hero of Alexandria)
3. Middle Ages outside Europe (Aryabhata and Brahmagupta, al-Kwarizmi, al-Karaji and Khajjam) and in Europe (Gerbert of Aurillac, Fibonacci, N.Oresme)
4. 15th and 16th centuries (Scipione del Ferro, G.Cardano, L.Ferrari, Francçis Vi?te)
5. 17th century (J.Kepler and G.Galilei, J.Napier and H.Briggs, R.Descartes, P.Fermat I B.Pascal, I.Newton and G.W.Leibniz)
6. 18th century (L.Euler, De Moivre, Bernoulli brothers, J.Riccati and A.C.Clairaut, J.d'Alembert, J.Gregory, B.Taylor, B.Cramer, G.Buffon, J.Bertrand)
7. 19th century (C.F.Gauss, N.Łobaczewski and J.Bolyai, C.G.Jacobi, B.Riemann, W.R.Hamilton, B.Bolzano, P.Czebyszew, P.S.Laplace, A.L.Cauchy i K.Weierstrass, G.Boole, N.H.Abel and E.Galois, J.Fourier, H.Poincaré, F.Klein, C.Jordan, G.Cantor)
8. 20th centuryk (G.Peano, D.Hilbert, B.Russell, K.Gödel, V.Volterra, H.Lebesgue, A.Kołmogorow, A.Turing, A.Tarski, S.Banach, P.Dirac, R.Hamming, E.Lorenz, P.Cohen, B.Mandelbrot, A.Wiles, T.Hales)

Update: 10.2018

Basic bibliography:

1. R.Courant, H.Robbins – *What is mathematics ?* (4th edition), Oxford University Press 1947;
pol. *Co to jest matematyka*, PWN 1959; (uzup. Ian Stewart) Prószyński i S-ka 1998
2. E.Hairer, G.Wanner - *Analysis by its history*, Springer 2008.
3. V.Katz - *A history of mathematics, an introduction* (third edition), Pearson Addison-Wesley 2009.
4. M. Kordos - *Wykłady z historii matematyki*, Script Warszawa 2005.
5. R.Murawski – *Filozofia matematyki. Zarys dziejów*, Wyd.Naukowe UAM 2017

Above books are in or will be included into the resources of the university library (2018-10-30)

Additional bibliography:

1. J.D.Barrow – *Pi in the sky. Counting, thinking and being*, Oxford University Press 1992;
pol. *Pi razy drzwi. Szkice o liczeniu, myśleniu i istnieniu*, Prószyński I S-ka 1996.
2. C.B.Boyer – *A history of mathematics*, John Wiley & Sons 1968.
3. K.Ciesielski, Z.Pogoda – *Królowa bez Nobla. Rozmowy o matematyce*, Demart 2013.
4. T.Crilly – *50 mathematical ideas you really need to know*, Quercus 2008;
pol. *50 teorii matematyki, które powinieneś znać*, PWN 2012.
5. D.Guedi – *L'empire de nombres*, Gallimard 1996; pol. *Imperium liczb*, G+J 2003.
6. M.Heller – *Co to jest matematyka ?*, Zagadnienia filozoficzne w nauce XXVIII-XXXIX/201, 70-71, stron 12.
6. A.Marlewski – *Sinus mathematicus III: Wiedza, nauka, matematyka*, Głos Politechniki 4/2018, 47-55
8. F.Murlak – *Czy 'Co to jest matematyka' Couranta i Robbinsa jest książką popularną* ?, MSM (Matematyka-Społeczeństwo-Nauczanie) Siedlce 35/2008,42-47
9. Clifford A.Pickover – *Wonders of numbers. Adventures in mathematics, mind and meaning*, Oxford Univ. Press 2001.
10. Piergiorgio Odifreddi – *La matematica del Novecento: Dagli insiemi alla complessitá*, Giulio Einaudi 2000.
ang. *The mathematical century. The greatest problems of the last 100 years*, Princeton University Press 2004.
11. J.Stillwell – *Mathematics and its history*, Springer 2010.
12. D.J.Struik - *A concise history of mathematics*, Dover Publications 1948;
pol. *Krótki zarys historii matematyki do końca XIX wieku*, PWN 1963.

Result of average student's workload

Activity	Time (working hours)

1. attending lectures/classes at the university, consulting	35
2. studying lecture material and developing an elaboration to be presented in the class	25

Student's workload

Source of workload	hours	ECTS
Total workload	60	2
Contact hours	35	1
Practical activities	25	1