UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	MATEMATIKA
Course title:	MATHEMATICS

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Varstvo okolja in ekotehnologije, 1. stopnja	/	1.	1.
Environmental Protection and Eco-technologies, 1st level	/	1st	1st

Vrsta predmeta / Course type Obvezni predmet / Obligatory subject

Univerzitetna koda predmeta / University course code: MA

Predavanja Lectures	Seminar Seminar	Sem. Vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
40	/	30	/	/	100	6

Nosilec predmeta / Lecturer: izr. prof. dr. Kristijan Breznik Kristijan

Jeziki /	**Predavanja / Lectures:**	Slovenski / Slovenian
Languages:	**Vaje / Tutorial:**	Slovenski / Slovenian

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Prerequisits:

Matematična znanja, opredeljena s katalogom znanj za opravljanje mature iz matematike.	Mathematical knowledge, defined by the catalog of knowledge for graduation in secondary school.

Vsebina:

Content (Syllabus outline):

1. Številske množice (osnovni pojmi, realna števila (urejenost, podmnožice, absolutna vrednost, intervali), upodobitve množic) 2. Zaporedja (osnovni pojmi (okolica, stekališče, limita), izreki o konvergentnih zaporedjih, aritmetično in geometrijsko zaporedje, številska vrsta in njena vsota, geometrijska vrsta) 3. Funkcije (osnovni pojmi, graf, inverzna funkcija, limita funkcije, zvezne funkcije, pregled elementarnih funkcij) 4. Diferencialni račun (odvod (definicija, geometrijski pomen, pravila za odvajanje, odvodi elementarnih funkcij), lastnosti odvedljivih funkcij, diferencial, višji odvodi, ekstremi, prevoji, konveksnost, konkavnost, načrtovanje funkcij) 5. Integralni račun (definicija in geometrijski pomen, lastnosti, zveza med določenim in nedoločenim integralom, uporaba, posplošeni integral, približno računanje določenega integrala) 6. Kombinatorika (osnovni pojmi in osnovni zakon kombinatorike, variacije, permutacije, kombinacije, porazdelitve)	1. Number set (basic concepts, real numbers (arrangement, subsets, absolute value, intervals), representations of masses) 2. Sequences (basic concepts (surroundings, glasshouses, limits), theorems on convergent sequences, arithmetic and geometric sequences, number series and its sum, geometric series) 3. Functions (basic terms, graph, inverse function, limit functions, continuous functions, overview of elementary functions) 4. Differential calculus (deduction (definition, geometric meaning, separation rules, derivatives of elementary functions), properties of derivable functions, differential, higher derivatives, extremes, transitions, convexity, concavity, function planning) 5. Integral calculus (definition and geometric meaning, properties, connection between definite and indefinite integral, use, generalized integral, approximate calculation of a definite integral) 6. Combinatorics (basic concepts and basic law of combinatorics, variations, permutations, combinations, distributions)

Temeljni literatura in viri / Textbooks:

Jamnik R., Matematika, DMFA, Ljubljana, 1994.
P. Mizori Oblak, Matematika za študente tehnike in naravoslovja I, II, Fakulteta za strojništvo, Ljubljana 2001.
M. Zeljko, Matematične metode, http://www.dmfa.si/www_zeljko/lectures/2011/BioT-Matematika.pdf
R. Courant, J. Fritz, Introduction to Calculus and Analysis, vol. 1, Springer, 2000.

Cilji in kompetence:	**Objectives and competences:**
Študent bo pridobil znanje in spretnosti na naslednjih splošnih vsebinskih področjih:	*Student will acquire knowledge and skills in the following general areas:*
Delo s podatki in informacijami; Spretnosti kritičnega mišljenja;	Work with data and information; Critical thinking;
Študent bo pridobil znanje in spretnosti na naslednjih specifičnih vsebinskih področjih:	*Student will acquire knowledge and skills in the following specific areas:*
Matematika in statistika na vsebinskem področju predmeta; Splošna razgledanost na vsebinskem področju predmeta.	Mathematics and statistics in the fields of the course; General overview of the course content area.

Predvideni študijski rezultati:	**Intended learning outcomes:**
1. Uporablja znanje iz osnov matematike (množice, računske operacije na številskih množicah, logaritem, absolutna vrednost itd.) 2. Razume lastnosti zaporedij (monotonost, konvergentnost, omejenost) ter lastnosti aritmetična in geometrijska zaporedja. 3. Pozna neskončne geometrijske vrste. 4. Uporablja odvod ter pozna njegov geometrijski pomen. 5. Pozna nedoločen in določen integral ter zna ga uporablja v nalogah. 6. Pozna kombinatorične metode.	1. Uses the knowledge of basic mathematics (sets, arithmetic operations on numeric sets, log, absolute value, etc.) 2. Understands the characteristics of sequences (monotone, convergence, boundries) and the properties of arithmetic and geometric sequences. 3. Knows infinite geometric series. 4. Uses derivatives and knows its geometrical meaning. 5. Knows indefinite and definite integral and knows how to use it. 6. Knows metods of combinatorics.

Metode poučevanja in učenja:	**Learning and teaching methods:**
Frontalna oblika poučevanja; Samostojno delo študenta;	Frontal teaching; Independent student work;
Razlaga; Razgovor/diskusija/debata; Reševanje nalog;	Explanation; Conversation/discussion/debate; Solving exercises;

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Sprotno pisno ocenjevanje	**30**	Written Assessment
Konči pisni izpit	**70**	Final written examination
Ocenjevalna lestvica: ▪ zadostno 6: 50-59% ▪ dobro 7: 60-69% ▪ prav dobro 8: 70-79% ▪ prav dobro 9: 80-89% ▪ odlično 10: 90-100%		Grading system: ▪ Sufficient D (6): 50-59% ▪ Good C (7): 60-69% ▪ Very good B (8): 70-79% ▪ Very good B+ (9): 80-89% ▪ Excellent A (10): 90-100%

Materialni pogoji za izvedbo predmeta :	Material conditions for subject realization:
Za izvajanje predavanj je potrebna predavalnica z multimedijsko opremo, za vaje učilnica z ustrezno veliko tablo.	A lecture room with the multimedia equipment is required for the lectures, for the exercises classroom with a corresponding large board.

Obveznosti študentov:	Student's commitments:
Obvezna udeležba na vajah. Oddane sprotne naloge.	Mandatory attendance at exercises. Written assessments.

Reference nosilca predmeta:	Lecturer's references:
BREZNIK, Kristijan, SKRBINJEK, Vesna. Citation network analysis of documents on engineering and technology education. Global journal of engineering education, ISSN 1328-3154, 2017, vol. 19, no. 3, str. 213-218, ilustr. http://www.wiete.com.au/journals/GJEE/Publish/vol19no3/06-Breznik-K.pdf. [COBISS.SI-ID 39336965]	BREZNIK, Kristijan, SKRBINJEK, Vesna. Citation network analysis of documents on engineering and technology education. Global journal of engineering education, ISSN 1328-3154, 2017, vol. 19, no. 3, str. 213-218, ilustr. http://www.wiete.com.au/journals/GJEE/Publish/vol19no3/06-Breznik-K.pdf. [COBISS.SI-ID 39336965]
LAW, Kris, BREZNIK, Kristijan. Impacts of innovativeness and attitude on entrepreneurial intention : among engineering and non-engineering students. International journal of technology and design education, ISSN 0957-7572, Dec. 2017, vol. 27, iss. 4, str. 683-700, ilustr. http://link.springer.com/article/10.1007/s10798-016-9373-0, doi: 10.1007/s10798-016-9373-0. [COBISS.SI-ID 38712325]	LAW, Kris, BREZNIK, Kristijan. Impacts of innovativeness and attitude on entrepreneurial intention : among engineering and non-engineering students. International journal of technology and design education, ISSN 0957-7572, Dec. 2017, vol. 27, iss. 4, str. 683-700, ilustr. http://link.springer.com/article/10.1007/s10798-016-9373-0, doi: 10.1007/s10798-016-9373-0. [COBISS.SI-ID 38712325]
MAROVT, Janko, BREZNIK, Kristijan. Praktikum iz poslovno-finančne matematike. Spremenjena in dopolnjena izd. Maribor: Fakulteta za naravoslovje in matematiko, 2014. 132 str., graf. prikazi, tabele. ISBN 978616570. [COBISS.SI-ID 79521025]	MAROVT, Janko, BREZNIK, Kristijan. Praktikum iz poslovno-finančne matematike. Spremenjena in dopolnjena izd. Maribor: Fakulteta za naravoslovje in matematiko, 2014. 132 str., graf. prikazi, tabele. ISBN 978616570. [COBISS.SI-ID 79521025]
BREZNIK, Kristijan, MAROVT, Janko. Praktikum iz poslovno-finančne matematike. Maribor: Fakulteta za naravoslovje in matematiko, 2011. 129 str. ISBN 978616573. [COBISS.SI-ID 65332993]	BREZNIK, Kristijan, MAROVT, Janko. Praktikum iz poslovno-finančne matematike. Maribor: Fakulteta za naravoslovje in matematiko, 2011. 129 str. ISBN 978616573. [COBISS.SI-ID 65332993]
MAROVT, Janko, BREZNIK, Kristijan. Anticipativno obrestovanje = Anticipative interest rate. Matematika v šoli, ISSN 1318-010X, 2010, letn. 16, št. 3/4, str. 796. [COBISS.SI-ID 15773017]	MAROVT, Janko, BREZNIK, Kristijan. Anticipativno obrestovanje = Anticipative interest rate. Matematika v šoli, ISSN 1318-010X, 2010, letn. 16, št. 3/4, str. 796. [COBISS.SI-ID 15773017]
BREZNIK, Kristijan, MAROVT, Janko. Nekaj več o praštevilih = More about the prime numbers. Matematika v šoli, ISSN 1318-010X, 2012, letn. 18, št. 1/2, str. 906. [COBISS.SI-ID 16283737]	BREZNIK, Kristijan, MAROVT, Janko. Nekaj več o praštevilih = More about the prime numbers. Matematika v šoli, ISSN 1318-010X, 2012, letn. 18, št. 1/2, str. 906. [COBISS.SI-ID 16283737]
BREZNIK, Kristijan. Using social network analysis to identify innovation clusters. International journal of innovating and learning, ISSN 1471197, 2016, vol. 19, no. 3, str. 27285. [COBISS.SI-ID 38308869]	BREZNIK, Kristijan. Using social network analysis to identify innovation clusters. International journal of innovating and learning, ISSN 1471197, 2016, vol. 19, no. 3, str. 27285. [COBISS.SI-ID 38308869]
BREZNIK, Kristijan, RAGOZINI, Giancarlo. Exploring the Italian Erasmus agreements by a network analysis perspective. V: ASONAM 2015 : proceedings of the 2015 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining, Paris, France, August 258, 2015, 2015 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining, Paris, France, August 258, 2015. [S. l.: s. n.], cop. 2015, str. 83738, graf. prikazi. http://dl.acm.org/citation.cfm?doid=2808797.2808864, doi: 10.1145/2808797.2808864. [COBISS.SI-ID 13878945]	BREZNIK, Kristijan, RAGOZINI, Giancarlo. Exploring the Italian Erasmus agreements by a network analysis perspective. V: ASONAM 2015 : proceedings of the 2015 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining, Paris, France, August 258, 2015, 2015 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining, Paris, France, August 258, 2015. [S. l.: s. n.], cop. 2015, str. 83738, graf. prikazi. http://dl.acm.org/citation.cfm?doid=2808797.2808864, doi: 10.1145/2808797.2808864. [COBISS.SI-ID 13878945]
Glavni urednik mednarodne revije IJMKL in član uredniških odborov 6-ih indeksiranih (SCI in/ali Scopus) mednarodnih revij.	Editor-in-chief of the international journal IJMKL and a member of editorial boards of 6 indexed (SCI and/or Scopus) international journals.