DEPARTMENT OF MATHEMATICS EDUCATION
FACULTY OF MATHEMATICS AND SCIENCEEDUCATION
UNIVERSITAS PENDIDIKAN INDONESIA
Jl. Dr. Setiabudhi 229, Bandung 40154, Telp/Faks. (022) 2004508

LIST OF COURSE REQUIREMENTS
MATHEMATICS EDUCATION STUDY PROGRAM

NO.	CODE	NAME OF COURSES	Credits	NAME OF PREREQUISITE COURSE	DESCRIPTION
1	DK301	Educational Psychology and Counseling	2	-	Educational Psychology and Guidance courses are compulsory subjects for all UPI students who are pursuing educational disciplines. This course examines the basic concepts of educational psychology and guidance that underlies the implementation of learning that educates and guides independent learners. Topics of study in this course include: (1) educational psychology in educational science and practice, (2) characteristics of effective teachers in the perspective of educational psychology, (3) student development, (4) student learning, (5) development of motives and motivation learning, (6) basic concepts of guidance and counseling, (7) approaches, strategies, and techniques of guidance, (8) diagnostics of learning difficulties and remedial teaching, (9) guidance-based learning, and (10) evaluation of education and assessment of guidance. The learning approach used includes inquiry and discovery learning through assignments (recitation), independent study, reflective dialogue, and group discussions. Lecture evaluation consists of evaluating the learning process and results through an assessment of class activities, assignments, papers, UTS, and UAS.

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NO.	CODE	NAME OF COURSES	Credits	NAME OF PREREQUISITE COURSE	DESCRIPTION
2	KU100	Islamic Education	2	-	This course is a compulsory public course/personality development given to all Moslem students in all study program at Universitas Pendidikan Indonesia. In this course students learn the basic knowledge of Islamic teachings that will be used as a source of value and basis of thinking and behaving in science and profession involved. Students learn about methodology of understanding Islam, people and religion, source of Islamic teachings, faith, worship, piety, marriage and heritage, management and utilization of property, islamic study, and schools of thought in Islam, morals, da'wah amar ma'ruf nahi munkar, jihad in the way of Allah, and leadership of religious community. In addition to mastering these materials, students must pass pai tutorial activities and be able to recite Al-Qur'an
3	KU101	Christian Protestant Education	2	-	This course serves to build the foundation of students' faith and belief in God Almighty and understanding of values so that they have a commitment to uphold human values and show religious attitudes showing a love for the Nation and Country.
4	KU102	Catholic Christian Education	2	-	Students understand themselves in terms of their origins and purpose in life as the image of God who is religious and believes in Christ and as the Church is sent to continue the work of salvation in the

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					community.
5	KU103	Hindu Education	2	-	-
6	KU104	Buddhist Education	2	-	-
7	KU105	Civics Education	2	-	This course examines the Introduction to Understanding Personality Development Courses in Pancasila Education and Citizenship in Higher Education; Pancasila as a philosophy, the basis of the State and National Ideology; National Identity; State and Constitution; Human Rights and Citizens' Rights and Duties; Democracy and the rule of law; Indonesian Geopolitics in the form of Archipelago Insights; State Organization Organization System; and Indonesian Geostrategy in the form of National Resilience. The learning method is carried out through expository, lecture, question and answer, group discussion, presentation, and observation.
8	KU106	Indonesian Language Education	2	-	This course examines material about MKWU Indonesian Language Education including the Nature of Language, Indonesian Language Development, Indonesian Today, Variety of Languages and Its Characteristics, Diction or Word Choice, Enhanced Indonesian Spelling, Effective Sentences, Paragraphs or Alenia, Scientific Writings, Papers, Research Reports, Journal Articles, Reasoning , and Scientific Presentation
9	KU109	Konghucu Education	2	-	-
10	MA100	Mathematics, Science,	3	-	Mathematics, Science, Technology, and Engineering

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		Technology and Engineering			(MSTR) courses are Faculty Expertise Courses (MKKF) with Mandatory status for FPMIPA students. The competencies provided in this course are to develop literacy in mathematics, science, technology, and engineering, solve problems around them critically, creatively, integratively and multidisciplinary, collaborate in teams, communicate actively and effectively in making decisions by considering local, national, and global challenges. As well as the formation of an attitude of concern and tolerance for social, economic, and environmental problems in the context of realizing Education for Sustainable Development (ESD) and Sustainable Development Goals (SDGs). The subject matter of the lecture contains the theme of Food and Transportation. This course is integrative and the implementation of project-based learning. The learning process uses Inquiry based learning and Problem based learning models. The assessment is carried out through the assessment of participation, performance, assignments, activity results reports.
11	MT300	Basic Mathematics	3	-	This course is one of the compulsory subjects that must be followed by all students of the Department of Mathematics Education, FPMIPA UPI. After attending this course, students are expected to have an understanding of mathematical concepts which are the basic material and supporting material for advanced courses. The subject matter of this course

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					consists of: set theory, real number systems, systems of equations and inequalities, functions and graphs, and logic and mathematical proofs. This lecture is carried out using an inductive-deductive approach and problem solving with lecture and question and answer methods. The media used are handouts, power points and e-learning. Students' understanding is measured through independent assignments and structured assignments either directly or through e-learning, middle test (UTS) and final test (UAS)
12	MT303	English for Mathematics	2	-	This course provides a good understanding of math vocabulary in English. Students will re-learn math topics that they have learned before but use English. The topics are Algebra, Statistics, Calculus, Number Theory, Geometry. After completing this course, students are expected to be able to study mathematics books or articles in English. Students are also expected to be able to write articles and contribute to international seminars
13	MT305	Number Theory	2	-	This course is intended to provide students with the ability to prove beginners to learn mathematical proofs. The material in this course is full of evidence. The proof strategy is developed in understanding a number theory concept. The ability to prove in this course is expected to bridge

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					students' understanding in learning more abstract mathematical concepts at the next level. The topics covered in this lecture include Mathematical Induction, Division Algorithms, Greatest Common Divisor, Euclid's Algorithm, Least Common Multiple, Diophantine Equations, Basic Properties of Congruence, Divisibility Test, Linear Congruence, Linear Congruence System, understanding prime numbers and composite numbers, and prime factorization.
14	MT413	History of Mathematics	2	-	The History of Mathematics course (MT413) is a compulsory subject at the undergraduate level in the Mathematics Education Study Program which is presented through investigative studies of various credible primary sources on the development of mathematical concepts from the era of ancient to modern civilizations. The results of the study include facts, concepts, principles, to the implications and their application in various sciences and education. Through the example of the figures, the process of concept development, and all its events can be seen as a learning organization in inspiring the professional duties of educators. The learning topics include the Development of Numerical Systems, Egyptian and Babylonian Mathematics, Pythagorean Mathematics,

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					Duplication, Trisection and Quadrature, Euclidean Elements, Greek Mathematics, Hindu Arabic Mathematics, European Mathematics, Early Modern Mathematics, and the Development of 20th Century Transitional Mathematics.
15	DK300	Foundations of Education	2	-	The Education Foundation course is classified as a basic kepemdii course (MKDK) which is part of the overall education curriculum for education personnel. This course is given in the first year with a weight of 2 credits for one semester. This course presents a discussion of various educational assumptions. The course material includes the basic concepts of education, the implications of human nature on education, the notion of education, education as a science and art, the philosophical foundations of education, the psychological foundations of education, the sociological and anthropological foundations of education, the historical foundations of education and the juridical foundations of education. In accordance with the vision and mission of UPI, among others, is to organize education to prepare professional educators (teachers). In this regard, as one of the basic professional courses, basic education courses are important and relevant in order to realize teacher competence in prospective

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					teachers.
16	KU108	Sports and Physical Education	2	-	Physical Education and Sports courses include general courses (MKU) which are part of the overall educational and non-educational curriculum at the Indonesian Education University. Physical Education and Sports courses are given in the second year with a weight of 2 credits for one semester. This course equips students with learning experiences that are directed at developing lifelong health, physical fitness and affective values. By participating in this course, students are expected to have a better quality of life, reduce the risk of disease and get psychological and emotional benefits through physical activity. In addition, the approaches, methods and learning models developed in this course are directed to provide the widest opportunity for students to improve their social and cognitive skills so as to form a healthy and active lifestyle and increase participation in independent physical activities throughout their lives. In line with UPI's goal of producing educators, education staff, scientists, and experts in all types and programs of higher education, who fear God Almighty and have global competitive and comparative advantages, the Physical Education and Sports courses are very relevant and important. to realize the achievement of UPI's Vision and Mission

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17	KU110	Pancasila Education	2	-	Pancasila Education as a group of General Compulsory Courses functions as a source of values and guidelines in the development and implementation of Study Programs in order to strengthen the personality of students. This course examines the material Introduction to Understanding Pancasila Education, Historical Review of Pancasila, Pancasila as a View of Life and the Basics of the State, Pancasila as a Philosophical System, Pancasila as a State Ideology, Pancasila as an Ethics System, and Pancasila as the Basic Values in the Development of Science. The learning process uses the Flipped Classroom Model, which consists of three main activities, namely (1) Learning before class (Before Classroom), (2) Learning in Class (During Classroom), and Learning After Class (After Classroom).
18	MA200	Applied Mathematics, Science, Technology and Engineering	3	• Mathematics, Science, Technology and Engineering	Mathematics, Science, Technology, and Engineering Applications (AMSTR) is a Faculty Expertise Course (MKKF) with Mandatory status for FPMIPA students. The competencies provided in this course are to develop literacy in mathematics, science, technology, and engineering, solve problems around them critically, creatively, integratively and multidisciplinaryly, collaborate in teams, communicate actively and effectively in making decisions by considering challenges. local, national, and global, as well as the formation of an

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					attitude of concern and tolerance for social, economic, and environmental problems in the context of realizing Education for Sustainable Development (ESD) and Sustainable Development Goals (SDGs). The subject matter of the lecture contains the theme of Energy and the Environment. This course is integrative and the implementation of project-based learning. The learning process uses the Inquiry based learning and Problem based learning models. The assessment is carried out through the assessment of participation, performance, assignments, activity results reports.
19	MT301	Differential Calculus	3	• Basic Mathematics	In this course, students will study and examine the concepts of: Functions, limit functions and continuity (definitions, properties, derivative formulas, and their applications), transcendent functions (definitions, properties, and their applications; integral integrals) definite and definite integral (definition, properties, and formulas).
20	MT302	Analytical Geometry	3	• Basic Mathematics	This course will discuss about coordinate systems, equations of straight lines, equations of circles, equations of conic sections, parabolas, ellipses, and hyperbolas, spatial coordinate systems, planes, straight lines in space, and surfaces and curves.
21	MT308	Basic Statistics	3	-	This course will discuss about introduction : Statistic and Statistics, Various Statistics, Populations and

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NO.	CODE	NAME OF COURSES	Credits	NAME OF PREREQUISITE COURSE	DESCRIPTION
					Samples, Data Collection, Rules for Rounding Numbers; Data Presentation: Various Tables, Bar Charts, Line Charts, Pie Charts, Symbol Charts, Making TDF, Terms in TDF, Types of TDF (Relative and Cumulative), Histograms and Frequency Polygons, Ogifs, Stem and Leaf Charts ; Various Measures: Mean, Median, Mode, Quartile, Decile, Percentile, Range, Interquartile Range, Average Deviation, Standard Deviation, Standard Score, Coefficient of Variation, Skewness Measures and Coefficient Kurtosis Measures; Use of Some Tables: Standard Normal Distribution Table, t Distribution Table, Chi-Square Distribution Table, F Distribution Table; Sampling Distribution: Distribution of One Average, Distribution of One Proportion, Distribution of Two Averages, Distribution of Two Proportions; Parameter Estimation : Various Estimates, One Mean Interval Estimate, One Proportion Interval Estimate, One Standard Deviation Interval Estimate, Two Means Interval Estimate, Two Proportions Interval Estimate; Hypothesis Testing: Hypothesis Testing Steps, Normality Test, One Mean Test, One Proportion Test, Two Variances Test, Two Means Test, More Than Two Variances Test, More Than Two Means Test; Regression and Correlation

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NO.	CODE	NAME OF COURSES	Credits	NAME OF PREREQUISITE COURSE	DESCRIPTION
					Analysis: Some Terms in Regression Analysis, Simple Linear Regression Coefficient Formula, Linearity Test and Simple Linear Regression Significance Test, Multiple Linear Regression Coefficient Formula, Multiple Linear Regression Coefficient Significance Test, Correlation Coefficient Formulas, Significance Test, Correlation Coefficient Estimated, Correlation Coefficient Interval; Nonparametric Statistics: Introduction, Various Measurement Scales, Mann-Whitney Test, Wilcoxon Test, Kruskal-Wallis Test, Correlation, Pearson Correlation, Neyman Pearson Correlation.
22	MT319	Entrepreneurship	2	-	Entrepreneurship course is a compulsory subject that all mathematics study program students must follow. This course aims to provide students have an entrepreneurial spirit and build entrepreneurship that able to create new jobs. In this course, students have a flexibility to create innovative business plan and prototype of product based on designed business plan. Students also analyze the feasibility of their buisness plan involving venture capital, place of business, management, and marketing. The methods used are expository project, discussions, presentations, questions and answers. At the end of semester, students compile reports and perform presentation.

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23	KU119	Art Education	2	-	Branch of Art, Basic music concepts, Basic elements of Music, Acoustics and organology, Types of music, Performing arts studies, Music psychology, Music and street musicians, Culture and the arts, Functions of art in society, Archipelago traditional arts, and art practice.
24	DK304	Management of Education	2	-	The Education Management course is included in the MKDP where every student (student) who attends education at the Indonesian Education University (UPI) is obliged to study it because as a prospective educator and education staff must be able to understand the process of implementing education in general and in particular the process of providing education in general. every education unit, both levels, pathways and types of education that have been determined by the government. The discussion that becomes the main basis in Education Management, relates to how the process of providing education can run according to the expected goals at the Macro, Meso and Micro levels. Based on this description, basically the management of education is to apply the rules of administration in the field of education that must be carried out by individuals or groups who will become managers of education in general and education units in

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					particular. After completing this course, it is hoped that every student (student) can carry out the functions and principles as an administrator or education executor who is able to accommodate the needs of the community who use educational services which are always changing according to the times. The Education Management course explains how important it is that the process of providing education and implementing the main tasks of education in schools/educational institutions is managed professionally, effectively, efficiently, transparently and accountably. The scope of the Education Management course is the concepts, functions, roles, theoretical perspectives, and principles of education management that underlie the implementation of education. School as a organizational structure is analyzed as rational system such as A Machine Model, and natural system such as An Organic Model. Pragmatically, the MK in Educational Management studied several selected topics such as: philosophy of education administration, educational organization, school management, educational leadership, curriculum implementation management, management of educators and education personnel, student

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					management, management of facilities and infrastructure, management of education financing, management of education marketing. , education partnership management, entrepreneurship management, education supervision, education information system and education quality improvement management.
25	MT307	Integral Calculus	3	• Differential Calculus	This course examines in depth the concepts of integration with substitution, partial integration, integration of several trigonometric functions, integration with trigonometric substitution, and integration of rational functions; The area of the flat plane, and the volume of the solid object using the method of parallel slices; The volume of the rotating object using the disc method, the volume of the rotating object using the ring method, the volume of the rotating object using the tube shell method, the length of the curve, and the surface area of the rotating object; Center of mass of a plate, centroid, and Pappus' theorem; Indeterminate forms of the type 0/0 and /∞, L'hopital's theorem, and other indefinite forms; Improper integrals and their properties; Infinite sequences and series, positive series: Integral and other tests, Power series and their operations, and Talor and Maclaurin series.

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26	MT309	Discrete Mathematics	3	• Basic Mathematics	This course aims to equip students with critical, systematic and logical mathematical thinking skills through understanding and analyzing patterns, structures, concepts, principles, and regularities in discrete mathematics. The lecture material provided consists of graph theory, relations, and automata (finite state machines).
27	MT311	Linear Algebra	4	• Basic Mathematics	This course contains the basics of linear algebra, which includes the topics of matrix operations, determinants, vector space, inner product space (finite dimension), linear mapping, eigen theory and matrix diagonalization. The lecture method used is expository, lecture, discussion, question and answer, and problem-solving/proving statements.
28	MT316	Geometry	3	• Basic Mathematics • Logic and Mathematical Proof	This course is given to students so that students can have basic knowledge, understanding and abilities in the field of geometry, and can solve relevant problems in the field of geometry. In addition, practically, students are expected to be able to take advantage of some mathematical software that is relevant to the field of geometry, such as GeoGebra. In this course, students will study and examine concepts: basics of axiomatic systems in mathematics and geometry, introduction to Euclidean geometry, and introduction to non-

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					Euclidean geometry. Euclid's geometry that was studied covered the following topics: parallelism of lines, triangles and quadrilaterals, area of planes, congruence and similarity of triangles, Menelaus and Ceva's theorems, Varignon's theorems, and circles. Introduction to non-Euclidean geometry covered include: introduction to finite geometry, neutral geometry, hyperbolic geometry, and elliptic geometry.
29	MT540	ICT Literacy and Mathematics Learning Media	3	-	This course will discuss the meaning of media and teaching aids (manipulative materials), the importance of teaching aids, the requirements of good teaching aids and various kinds of teaching aids as well as making videos from the results of teaching aids made by students.
30	DK303	Curriculum and Instruction	2	-	This course equips student teacher candidates and education staff about curriculum and learning which includes the nature of the curriculum (position, understanding, function, and role of the curriculum); curriculum components; foundations for curriculum development; principles of curriculum development; curriculum approaches and models; curriculum evaluation and innovation; the nature of learning and learning; learning components; learning and learning principles;

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					learning model; and innovation in the implementation of learning. This course is a compulsory subject that must be taken by all students in the educational study program. Learning emphasizes student activities through discussion or problem solving activities and optimizing the search for relevant and up-to-date learning resources, including browsing results on sites on the internet. The discussion of the problem is carried out jointly by lecturers and students, ending with the elaboration of the lecture material by the lecturer in charge of the course.
31	MT306	Capita Selecta of Primary Education Mathematics	4	• Basic Mathematics	This course discusses Sets, Numbers and operations on numbers. Algebraic forms and operations on algebraic forms. Linear equations and inequalities with one variable (variable), points, lines, planes, angles, and line parallels. Triangles, Quadrilaterals and Spaces, Relationships, functions and graphs. Linear equations with two variables, straight-line equations, and Systems of linear equations.
32	MT315	Multivariables Calculus	3	• Differential Calculus • Integral Calculus	Multivariable Calculus course is an intermediate course at undergraduate program (S-1) in Mathematics and Mathematics Education Study Program and a continuation study of differential calculus and integral calculus lectures. It is also one of materials that is a fundamental course to study

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					vector calculus and other analytical subject groups. This course is presented through discussion method. The material studied in this course is a broader study of a one variable function. Developing of thinking process in the form of analogies, representations, generalizations on concept of a one variable function into a multivariable calculus concept is carried out to encourage students' understanding and application of multivariable concept to solve problems. Materials of Multivariable Calculus course include concept of limit functions, limit theorems, continuity, differential, and integral functions on multi variable functions.
33	MT312	Computer Programming	3	• Basic Mathematics	In this course, students will study and study the concepts: making algorithms or programming flowcharts; interpreting pseudocode, studying computer programming languages; implement components in programming languages; compare and apply programming techniques; apply and develop computer programming in mathematical problems.
34	MT400	Group Theory	3	• Basic Mathematics • Number Theory	This course intended to have the knowledge, understanding, and ability to identify, construct,

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				• Linear Algebra	prove an argument or group theory concepts. By studying this subject, students are expected to reason logically and systematically and analyze the validity of an argument. In this course, students will study and study about: 1) mapping and its kinds, various functions; 2) group and group characteristics, subgroup, cyclic group, permutation group, and symmetry; 3) homomorphism and group isomorphism; 4) equivalent relation; 5) koset and Lagrange theorem; 6) normal subgroup and factor group; 7) the fundamental theorem of homomorphism, and group automorphism; 8) and its use to solve problems
35	MT402	Ordinary Differential Equation	3	• Basic Mathematics • Differential Mathematics • Integral Mathematics • Linear Algebra	This course is a compulsory subject that is followed by students of the Mathematics Education study program. After attending this course, students are expected to have knowledge, understanding and abilities about: classification of types of differential equations, the background to the emergence of differential equations and can solve first-order ordinary differential equations, and second-order ordinary differential equations, Laplace Mapping; Solution of a series of linear differential equations.
36	MT422	Study of Mathematics	2	-	In the Study of Mathematics Education Problems

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		Education Problems			subject, current issues regarding various problems in mathematics education are discussed. These problems can arise from learning that comes from teachers or students, curriculum and implementation, learning theories or approaches, classroom management, mathematical competence, student difficulties in learning, evaluation or assessment and learning outcomes, or other forms of policy. in mathematics education. This course is expected to provide students with provisions in identifying mathematics education problems and determining alternative solutions. For this reason, students are given the task of conducting field observations to schools or other educational institutions to practice directly identifying problems in the field, and reviewing several recent journal articles, both national and international journals.
37	MT500	Mathematics Learning Strategies	3	-	The nature and purpose of education; the nature of mathematics; the nature of learning and learning; learning theory in mathematics learning; the purpose and function of learning mathematics; strategies in learning mathematics which include approaches, strategies, methods, techniques, tactics, models, and designs for learning mathematics; media and teaching aids in mathematics learning; issues in learning mathematics; problems in mathematics

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					learning and alternative solutions, design of mathematics learning and the theory that underlies it.
38	KU300	Islamic Education Seminar	2	• Islamic Education	This course is a general compulsory subject/personality development given to all Muslim students in all departments and study programs of D3 and S1 at the Indonesian Education University. In this course, students learn about the phenomenal, debatable, and actual religious problems that arise in society to be studied from a religious point of view. Students study problems in the fields of Education, Culture, Da'wah, Politics, Economics, Law, Technology, and scientific disciplines by using Islamic teachings as a reference in solving these problems. The prerequisite for taking this course is that students must have passed the PAI course and the prerequisite for graduating from this course is that students must pass the SPAI totorial.
39	KU301	Seminar on Christian Protestant Education	2	• Christian Protestant Education	This course serves to build the foundation of students' faith and belief in God Almighty and understanding of values so that they have a commitment to uphold human values and show religious attitudes showing a love for the Nation and Country.
40	KU302	Seminar on Catholic Christian Education	2	• Catholic Christian Education	-

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41	KU303	Seminar on Hindu Education	2	• Hindu Education	-
42	KU304	Seminar on Budhist Education Seminar	2	• Budhist Education	-
43	KU309	Seminar on Konghucu Education	2	• Konghucu Education	-
44	MT310	Capita Selecta of Secondary Education Mathematics	4	• Basic Mathematics • Differential Calculus • Number Theory • Integral Calculus • Capita Selecta of Primary Education Mathematics	This course is one of the MKIPS (Compulsory Courses) courses provided for students to choose from. The importance of this course, as a basis for knowledge and development of insight into selected high school mathematics topics, emphasizes the aspect of the novelty of presenting material that is suitable for high school students and their learning to realize abilities and skills according to the demands of the industrial era 4.0. The main topics discussed in this course are Mathematical Logic, Quadratic equations, Quadratic functions, Quadratic inequalities, Powers and Logarithms, Equations and Inequality, Trigonometric Comparison, Three-Dimensional Geometry (Spatial Geometry). Composition Functions and Inverse Functions, Trigonometric Functions and Equations II, Remaining Theorems and Factor Theorems, Analytical Geometry (Cone Slices), Mathematical Induction and Vectors, Counting Rules and Probability, Limits and Derivatives of Functions, Integrals.
45	MT317	Linear Programming	2	• Linear Algebra	This course will discuss about linear programming modeling, simplex method, revised simplex method,

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					sensitivity analysis (post optimal analysis, duality).
46	MT403	Real Analysis	3	• Differential Calculus • Integral Calculus	This course outlines an in-depth study of real numbers both in terms of structure (operations), related theorems, and concepts related to real numbers. In this course, students will study and examine in depth the concepts of the real number system and the sequence of real numbers. The concept of the real number system consists of the algebraic properties of real numbers, sequence properties in R, absolute values, completeness properties in R, supremum applications, intervals, finite sets, and calculated sets. The concept of a real number sequence consists of sequences and their limits, monotonous sequences, subsequences and the Bolzano-Weierstrass theorem, Cauchy's criterion, naturally divergent sequences, and an introduction to infinite series.
47	MT415	Mathematics Education Multimedia	3	• ICT Literacy and Mathematics Learning Media • Mathematics Learning Strategies	This course will discuss about constructing and creating powerpoint as mathematics teaching materials and mathematics learning videos as well as combining together of didactic-pedagogic concepts to produce multimedia.
48	MT501	Mathematics Learning Evaluation	3	• Capita Selecta School Mathematics	This course aims to equip students to understand the theory and practice of evaluation in schools. Theoretically, students will learn about: the meaning

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				• Mathematics Learning and Learning • Basic Statistics	and benefits of evaluation; the function and purpose of the evaluation; evaluation position in learning; and the scope of evaluation in the context of learning mathematics. During practice, students will: develop an evaluation plan; collecting data; processing and interpreting evaluation results using various software. In addition, students will also discuss and conduct class-based evaluations contained in the school curriculum.
49	MT404	Theoretical Descriptive Statistics	3	• Basic Mathematics • Differential Calculus • Integral Calculus • Basic Statistics	This course is intended to give students the ability to understand the concepts of descriptive statistics theoretically so that they are able to solve problems in descriptive statistics theoretically. Lecture materials include: Numbering techniques, Probability calculation, distribution of one random variable, distribution of two random variables, Expectation of one random variable, Expectation of two random variables, Some special discrete distributions, Some continuous special distributions, Some distribution techniques of random variable functions, Application of distribution techniques random variable function.
50	MT406	Vector Calculus	3	• Differential Calculus • Integral Calculus • Multi-variables Calculus	Vector Calculus subject is an extended study of multivariable calculus discussing topic of a vector-valued function as a central of lecture. Students are expected to understand the serial calculus

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					compeletely from real function to a vector-valued function. Lecture materials include vector functions, parameter equations, limits and continuity of vector function, derivatives of vector functions, integrals of vector functions; arc length; unit tangent vector, unit normal vector; curvature; movement in the field; vector field; line integral; Integrals over paths; Green's theorem, Divergence theorem in the plane, Gauss' divergence theorem, Stokes' theorem.
51	MT407	Ring Theory	3	• Basic Mathematics • Number Theory • Linear Algebra • Group Theory	This course is given with the aim that students know and understand abstract ideas and key ideas contained in algebraic structures such as definitions, theorems, lemmas, and corollaries along with their proofs. The topics discussed in this course are Introduction to Rings, Integral Regions, Fields, Ideals and Factor Rings, Ring Homomorphisms and Polynomial Rings.
52	MT412	Computer Mathematics Programming with Applications	3	• Basic Mathematics • Differential Calculus • Integral Calculus • Linear Algebra • Basic Mathematics • Multi-variables Calculus • Computer Programming	This course will discuss about functions and graphs of functions for either one or two variables; limits and derivatives of either one or two variables; Integral and its application; Vectors and operations on vectors; matrices and operations on matrices; System of linear equations; eigenvalues and eigenvectors; descriptive statistics; inference statistics and non-parametric statistics.

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NO.	CODE	NAME OF COURSES	Credits	NAME OF PREREQUISITE COURSE	DESCRIPTION
53	MT416	Combinatorics Mathematics	3	• Basic Mathematics • Linear Algebra • Integral Calculus	This course discusses the rules of counting, the principle of the pigeon cage and its application, the inclusive-exclusive principle and its application, the problem of recurring relations and their solutions, and the generating function. This course is intended to provide comprehension skills, combinatoric analysis, and problem solving in combinatoric mathematics. Evaluation in this course is carried out through student activities, assignments, mid-semester tests, and end-semester tests.
54	MT418	Complex variable functions	3	• Calculus • Real Analysis	This course examines in depth the concepts of complex numbers, complex functions, elementary transformations, basic topological concepts in complex fields, limits and continuity of complex functions, derivatives of complex functions, analytical functions, and complex integration. The topics studied include complex number systems, complex number geometry, roots of complex numbers, complex functions, elementary functions, linear transformations, inverse transformations, bilinear transformations, basic concepts in topology in complex fields, limits of complex functions, continuity of complex functions, derivatives complex functions, Cauchy Reimann equations, analytical functions, complex

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					integrations, Cauchy integrations, and Annulus.
55	MT421	Initial Value and Boundary Condition	3	• Ordinary Differential Equation	This course is an elective course followed by students of the mathematics education study program. After attending this course, students are expected to have knowledge, understanding and ability about: Linear Differential Equation Systems, Boundary Value Problems, Non-Linear Differential Equations and Systems, and their application to everyday problems.
56	MT430	Qualitative Research Methods	3	• Methodology of Mathematics Education Research	This course discusses: Fundamentals of Qualitative Research, Application of Qualitative Research, Problems and Qualitative Research Design, Designing and Selecting Samples, Designing Strategies and Field Work Materials, In-depth Interviews, Focus Groups, Practices, Principles, and Process Analysis; Conducting Qualitative Analysis; Drawing Conclusions from Qualitative Research; Reporting and Presenting Qualitative Data.
57	MT539	Mathematics Lesson Plan	3	• Mathematics Learning Strategies • Mathematics Learning Evaluation • ICT Literacy and Mathematics Learning Media • Capita Selecta of Primary	This course contains studies on the analysis of the school mathematics curriculum based on content standards, process standards, and assessment standards in mathematics learning, analysis and development of learning materials, basic concepts and principles of learning planning development, analysis of lesson plans associated with learning

NO.	CODE	NAME OF COURSES	Credits	NAME OF PREREQUISITE COURSE	DESCRIPTION
				Education Mathematics • Capita Selecta of Secondary Education Mathematics	models, practice of drafting annual and semester programs, syllabus and lesson plans (RPP), developing teaching materials in accordance with various learning strategies, making learning media, and compiling assessment tools.
58	KU400	Student Community Service	2	-	-
59	MT425	Methodology of Mathematics Education Research	3	• Education Foundation • Curriculum and Learning • Capita Selecta Mathematics • Mathematics Lesson Planning • Mathematics Learning Strategies • Basic Statistics	This course discusses scientific truth-seeking methods, understanding of mathematics education research, types of research, research problems, literature studies, research instruments, sampling methods, statistics in research, experimental research, correlational research, comparative causal research, survey research , and expost facto research
60	MT417	Transformational Geometry	3	• Analytical Geometry • Calculus • Geometry • Group Theory	This course is given to students in order to have basic knowledge, understanding and ability in the field of Transformation Geometry, and to be able to solve relevant problems in the field of geometry. In addition, practically, students are expected to be able to use some mathematical software that is relevant to the field of Transformation Geometry, such as GeoGebra. In this course, students will study and examine the concepts of: Definition of Transformation, Reflection (Reflection), Isometry, Transformation Composition, Inverse Transformation, Translation, Half Rotation, Rotation, and Shear Reflection.

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NO.	CODE	NAME OF COURSES	Credits	NAME OF PREREQUISITE COURSE	DESCRIPTION
61	MT314	Data Processing	3	• Basic Statistics	In this course, students will identify and discuss knowledge about types of data, data collection instruments/tools, data presentation, descriptive data analysis techniques, inferential data analysis techniques, as well as several data processing software such as: MS-Excel; SPSS, and Minitab are used in data processing, as well as interpreting the results of the data processing.
62	MT318	Numerical Methods	3	• Differential Calculus • Integral Calculus • Basic Statistics • Linear Algebra • Computer Programming	This course will discuss about error, interpolation, system of linear equations, approximation of functions using the least squares method, approximation of functions with series, numerical integration, numerical differential, and numerical, and solutions of ordinary differential equation. For each topic, it begins with the theory underlying the numerical method procedures, numerical solution errors, the algorithm for each method used, and is equipped with examples of calculations both manually and computationally.

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NO.	CODE	NAME OF COURSES	Credits	NAME OF PREREQUISITE COURSE	DESCRIPTION
63	MT401	Mathematics Education Seminar	2	• Capita Selecta of Primary EducationMathematics • Capita Selecta of Secondary Education Mathematics • Mathematics Lesson Plan • Mathematics Learning Strategie • Mathematics Learning Evaluation	The lecture process begins with deepening of concept that is closely related to the focus of problem studied, explaining the problem in depth and comprehensively, referring to the concept framework that has been understood, and reviewing the basics of theory so as to produce a theoretical framework that can be used as the basis for problem solving studied.
64	MT409	Theoretical Inferential Statistics	3	• Theoretical Descriptive Statistics	This course will discuss about Order Statistics (Some Probability Density Functions, Some Mathematical Expectations, Some Distributions of Order Statistical Functions), Approximating Distributions (Moment Generating Function Techniques, The Central Limit Theorems, Stochastic Convergence), Parameter Estimation (Various Estimations; Estimator Properties : Unbiased, Minimum Variance, Consistent, Sufficient Statistics; Exponential Family; Point Estimator Determination Method : Moment Method, Maximum Likelihood Method, Bayesian Estimator), Interval Estimation (Interval Estimate : Mean, Variance, Proportion, Difference of Two Means, Difference Two Proportions, In General), Hypothesis Testing (Some Terms, the best critical region, Uniform Most Powerful Test, Likelihood

NO.	CODE	NAME OF COURSES	Credits	NAME OF PREREQUISITE COURSE	DESCRIPTION
					Ratio Tests).
65	MT410	Theory of Functions of Real Variables	3	• Real Analysis	This course will discuss about the structure of mathematical concepts in general, especially regarding the concept of limit functions, continuous functions, uniform continuity, monotony of functions, inverse functions, derivatives of functions, the theorem of average values, L'Hospital rules, and Taylor's theorems.
66	MT419	Introduction to Topology	3	• Calculus • Real Analysis	This course discusses: open and closed sets; characteristics of open and closed sets, as well as Cantor sets; compact sets and the Heine Borel theorem; function continuity and function continuity at one point; preservation of the compactness of an assemblage; metric and semi-metric spaces; topology space; base and sub-base; and mapping in the topological space.
67	MT507	Decisions Theory		• Linear Programming	This course is intended to provide students with insight and knowledge about solving problems regarding decision making and others in the fields of economics, industry, agriculture and many other fields.
68	MT508	Multivariate Statistical Methods	3	• Matrix Algebra • Basic Statistics • Descriptive Statistics	This course is intended to provide students with insight and understanding about statistical concepts with multivariate data, and students can apply these concepts in solving daily problems. The topics

NO.	CODE	NAME OF COURSES	Credits	NAME OF PREREQUISITE COURSE	DESCRIPTION
				• Inferential Statistics.	studied include 1) Aspects of the multivariate, random matrix algebra and random vectors, random sampling, multivariate normal distribution, mean vector inference; 2) multivariate mean difference test (two groups, one-way and two-way ANOVA, one-way and two-way Manova); 3) multivariate regression model and path analysis; 4) principal component analysis, factor analysis, canonical correlation analysis, discriminant analysis and group analysis.
69	MT590	Introduction to the Unit of Education (An Internship)	4	-	-
70	MT598	Undergraduate Thesis	6	• Mathematics Lesson Plan • Methodology of Mathematics Education Research	-
71	MT599	Final Defense	0	-	-
TOTAL CREDITS SUM			145		

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Bandung, February 2021
Head of Mathematics Education Study Program

Sign

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