












Browse Syllabus

Year	2022
Course	Mathematics B
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Day/Period	Spring Semester Thu 1
Credit(s)	2
Instructor	GORO AKAGI TATSUYA TATE MASAKI HANAMURA
Semester	Spring Semester
Course code/number	SMA-MAT802E
Language Used in Course	English
Notes	

Affiliation	Faculty of Science
Course Title (Japanese)	数学概説B
Course Title (English)	Mathematics B
Purpose /Abstract (Japanese)	代数, 幾何, 解析からテーマを選び, それぞれの専門家が英語で解説することにより, 数学とその英語による表現方法を学ぶ.
Purpose /Abstract (English)	In this course we study several topics in advanced or basics of mathematics in Algebra, Geometry, and Analysis. Students are expected to gain a perspective of modern mathematics and how it is useful to understand mathematical phenomenon.
Goal (Japanese)	この講義ではいくつかのすすんだあるいは基本的な数学を学ぶ。受講生は展望と数学の有用性を理解できるだろう。
Goal (English)	In this course, we study several topics in advanced or basics of mathematics. Students are expected to gain a perspective of modern mathematics and how it is useful to understand the mathematical phenomenon.
Contents and progress schedule of the class (Japanese)	<p>ALGEBRA</p> <ol style="list-style-type: none"> 1. The notion of groups; examples 2. Representations of finite groups 3. Basic properties of representations I 4. Basic properties of representations II 5. Some examples <p>GEOMETRY</p> <ol style="list-style-type: none"> 1. Squared rectangles and Dehn's theorem 2. Proof of Dehn's theorem 3. Cohomology and harmonic forms on finite graphs 4. Structure of homology of finite graphs 5. Number of spanning trees: a version of matrix-tree theorem <p>ANALYSIS</p> <ol style="list-style-type: none"> 1. Linear elliptic equations 2. Fundamental solutions 3. Properties of harmonic functions 4. Green's functions 5. Variational methods
Contents and progress schedule of the class (English)	<p>ALGEBRA</p> <ol style="list-style-type: none"> 1. The notion of groups; examples 2. Representations of finite groups 3. Basic properties of representations I 4. Basic properties of representations II 5. Some examples <p>GEOMETRY</p> <ol style="list-style-type: none"> 1. Squared rectangles and Dehn's theorem

	<p>2. Proof of Dehn's theorem 3. Cohomology and harmonic forms on finite graphs 4. Structure of homology of finite graphs 5. Number of spanning trees: a version of matrix-tree theorem</p> <p>ANALYSIS 1. Linear elliptic equations 2. Fundamental solutions 3. Properties of harmonic functions 4. Green's functions 5. Variational methods</p>
	<p>Grading(Japanese) Report and attendance</p>
	<p>Grading (English) Report and attendance</p>
	<p>Books required /referenced (Japanese) No textbook assigned and we will give suitable references at each lecture</p>
	<p>Books required /referenced (English) No textbook assigned and we will give suitable references at each lecture</p>
	<p>Preparation and review (Japanese) Review the lecture notes and study relevant textbooks</p>
	<p>Preparation and review (English) Review the lecture notes and study relevant textbooks</p>
	<p>Practical business</p>
	<p>Remarks (Japanese)</p>
	<p>Remarks (English)</p>
	<p>Last Update 2022/02/13 14:20</p>
