Course number		U-LAS70 100	U-LAS70 10002 SE50								
Course title ILAS Se (and course title in ILAS Se English) Probabil		eminar-E2 :Introduction to ility (確率入門) eminar-E2 :Introduction to ility		Instr nam and of af	uctor's e, job title, department filiation	Research Institute for Mathematical Sciences Associate Professor, Croydon, David Alexander					
Group	Seminars in Liberal Arts and		nd Sciences	Sciences Number of credits		2 Number weekly time blo		of I			
Class style semina (Face-		ninar ace-to-face course)	Year/semes	sters	2025 • First	semester		Quota (Freshman) 8 (8)		(8)	
Target yea	r Mai	nly 1st year students	ligible studen	ts Fo	or all majors		Day per	/s and iods	Thu.2		
Classroom 14, Yoshida-South Campus Bldg. No. 4							guage of ruction	uage of action English			
Keyword	mather	mathematical analysis / applied mathematics and statistics / probability / stochastic process / Markov chain									
[Overview and purpose of the course]											
 well as introducing mathematical techniques, it will be a goal to show how these can be applied to understand certain random phenomena, such as the long-time behaviour of random walks, survival/extinction of branching processes, convergence of algorithms, and reinforcement. [Course objectives] To understand basic models of applied probability, particularly Markov chains 											
 To apply mathematical techniques to understand random phenomena in applications To gain experience in reading and presenting mathematics in English 											
[Course schedule and contents)]											
In the first lecture, the lecturer will introduce the topic, and basic aims of the course. For most subsequent weeks, the classes will consist of two parts: - a part where students present their attempts to solve problems set by the lecturer in the previous class; - a part where the lecturer introduces some new topics upon which the following week's student problems will be based.											
The following indicates possible topics, though this may vary depending on the students ' proficiency level and background.											
 (1) Introduct Review of b (2) Basic princless struct (3) Long- recurrence/ (4) Applica Random wate 	ction to basic propertie ure, hit time ba (transie tions [3 alks, bra	applied probability robability, definition as of discrete-time M ting times/probabili ehavior of discrete-t nce, invariant distril weeks] anching processes, u	and Markov c of a Markov larkov chains ties, computat ime Markov c outions, conve urn models, qu	chains chain, [7 wee ions u chains crgence leuing	[1 week] outline of cou eks] sing probabili [3 weeks] e to equilibriu models	irse ty genera m, time r Continue to ILAS	atin, ceve Semina	g functio ersal, ergo ar-E2 :Introductio	ns odic th n to Probabili	eorem ty (確率入門) (2)	

ILAS Seminar-E2 :Introduction to Probability (確率入門)(2)

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Total: 14 classes and 1 week for feedback

[Course requirements]

None

[Evaluation methods and policy]

Students will be expected to participate in class, both by presenting material prepared in advance, and by discussing problems. Their performance in these aspects will contribute 70% of the final mark. There will also be a final exam, in which students will be asked to apply the techniques covered in the course, which will also contribute 30% of the final mark.

[Textbooks]

Norris [®]Markov Chains[®] (University Press, 1997)

Grimmett and Stirzaker Probability and random processes (Oxford University Press, 2001) All the material needed for this course will be provided in the classes, and so there is no need to purchase the listed textbooks. However, they are both good sources for additional reading. Particularly, the course will follow quite closely Chapter 1 of the Norris book.

[Study outside of class (preparation and review)]

As noted in the course schedule, from the second week, students will be asked to prepare and present problem solutions. (Their efforts on such assignments form part of the assessment.) Details will depend on the number of students enrolled on the course, and will be discussed in the first class. Typically the lecturer would expect students to spend 1-2 hours per week on study outside the class.

[Other information (office hours, etc.)]