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| 科目名 | Course Title |
| 数理科学特論 (Topics in Mathematical Science) | |
| 学科・専攻 | Department/Program |
| 多元数理科学研究科 | |
| 授業形態 | Class style |
| 必修・選択の別 | Compulsory or Elective |
| 講義 | |
| 時間割コード | Registration code |
| 1610096 | 開講期・曜日・時限 Semester,Day & Period |
| 単位数 | Credit |
| 2 | 科目区分 Course type |
| 担当教員 | Instructor |
| | セルジュ リシャル(Richard Serge) |
| 所属研究室 | Laboratory |
| | |
| 連絡先 | Contact |
| | |
| 居室 | Room |
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| 講義の目的とねらい | Course purpose |
| Title : K-theory for C^* -algebras, and beyond | |
| <p>This course will provide an overview of some recent tools introduced at the crossroad between functional analysis, geometry and operator algebras. It can be considered as a course on non-commutative topology, which is the first step toward non-commutative geometry. In order to provide a large panorama on the subject together with applications, some details might be omitted, but references for all proofs will be provided.</p> | |
| 履修要件 | Prerequisite |
| Knowledge on standard undergraduate linear algebra, calculus and advanced calculus. | |
| 成績評価 | Grading |
| | |
| 関連する科目 | Related courses |
| | |
| 他学科学生の聴講について | About attend other |
| <可否> 可能 <条件> This course is open for any students at Nagoya University. Motivated undergraduate students are also welcome. | |
| 教室 | Class room |
| Mathematics Building, room 309 | |

| レベル | Level |
|---|---------|
| 2 | |
| キーワード | Keyword |
| Hilbert space, self-adjoint operators, spectral theory, commutator methods. | |
| 履修の際のアドバイス | Advice |
| | |

| 到達目標 | Goal |
|---|------|
| Understand the basic notions of K-theory for C^* -algebras. | |

| 授業内容 | Content |
|--|---------|
| <p> C^*-algebras Projections and unitary elements K_0 group for a unital C^*-algebra K_0 group for an arbitrary C^*-algebra The functor K_1 The index map Higher K-functors, Bott periodicity The six-term exact sequence Cyclic cohomology Applications </p> | |

| 教科書 | Textbook |
|--|---------------------|
| Lecture notes will be provided for this course. | |
| 参考書 | Recommended reading |
| <p>Free reference books will be provided during the lectures, but first part of the course is mainly based on An Introduction to K-theory for C^*-algebras from Rordam, Larsen and Laustsen.</p> <p>More material will be available on</p> <p>http://www.math.nagoya-u.ac.jp/~richard/Ktheorie.html</p> | |
| 連絡方法 | Contact method |
| Anytime in my office, or by appointment made by email. | |
| その他 | Remarks |
| <p>Additional information and material will be added regularly on</p> <p>http://www.math.nagoya-u.ac.jp/~richard/Ktheorie.html</p> | |