Course plan

Representation Theory of Associative Algebras

Lecturer

Martin Herschend
E-mail: martinh@math.nagoya-u.ac.jp
Telephone: 052 789 5612
Office: A-331, School of Science, Building A

Website

`http://www.math.nagoya-u.ac.jp/~martinh/repTheory/`

Literature

Main book:

- I. Assem, D. Simson, and A. Skowronski. *Elements of the representation theory of associative algebras: 1*, London Mathematical Society Student Texts 65. Cambridge University Press, 2006.

Further reading:

- M. Auslander, I. Reiten, and S. O. Smalø. *Representation theory of Artin algebras*, Cambridge Studies in Advanced Mathematics 36. Cambridge University Press, 1997.
- P. Gabriel and A. V. Roiter. *Representations of finite-dimensional algebras*. Springer-Verlag, 1997.

Schedule

Lecture	Date	Topic	Chapters
1	October 4	Introduction	I.1
2	October 11	Algebras and modules	I.1, I.2
3	October 18	Structure of modules	I.3, I.4
4	October 25	Morita theory	I.5, I.6
5	November 1	Path algebras of quivers	II.1
6	November 8	The quiver of a finite dimensional algebra	II.2, II.3
7	November 15	Quiver representations	III.1, III.2
8	November 22	Dimension vectors and Euler characteristic	III.2, III.3
9	November 29	Almost split sequences	IV.1
10	December 6	The Auslander-Reiten translation	IV.2
11	December 13	The Auslander-Reiten quiver	IV.3, IV.4
12	December 20	Hereditary algebras	VII.1, VII.2
13	January 17	Integral quadratic forms 1	VII.3
14	January 24	Integral quadratic forms 2	VII.4
15	January 31	Gabriel's Theorem	VII.5

Examination

There will be six sets of problems to be handed in, each worth 100 points. The total amount of points obtained out of 600 will determine the final grade according to the following scale (A: 80%, B: 70%, C: 60%, F (fail): below 60%).