TOPICS IN MATHEMATICAL SCIENCE V, AUTUMN TEM 2018: MODULAR REPRESENTATION THEORY OF FINITE GROUPS

COURSE INFORMATION

Preliminary lecture plan.

	Date	Topic
1	4th October	Algebras and modules
2	11th October	The radical
3	18th October	Wedderburn's theorem
4	25th October	Maschkes's theorem
5	1st November	The Krull–Schmidt–Remak theorem
6	8th November	Free and projective modules
7	15th November	Duality
8	22nd November	Tensor products
9	6th December	Induced modules
10	13th December	Vertices and sources
11	20th December	Trivial intersections
12	27th December	Green correspondence
13	10th January	Green correspondence, *cont.*
14	17th January	Blocks and defect groups
15	24th January	Brauer correspondence

Time and venue. All lectures take place on Thursdays, 13:00–14:30, in room 409 in the Mathematics Building.

Examination. The examination consists of four sets homework assignments, which will be distributed during the course. To pass the course, one must obtain at least *50 %* of the total score of the four assignments combined.

The final grade is determined by the total score as follows:

$$A\text{: } 85\text{–}100\%, \quad B\text{: } 70\text{–}84\%, \quad C\text{: } 50\text{–}69\%, \quad F\text{: } 0\text{–}49\%.$$

Textbooks. The content of the lectures roughly corresponds to sections 1–14 of the book *Local representation theory* by J. L. Alperin (Cambridge University Press, Cambrige, 1986). Other books of possible interest include:

- J. F. Carlson, *Modules and group algebras.* Lecture notes in Mathematics, ETH Zürich. Birkhäuser Verlag, Basel, 1996.
- K. Erdmann and T. Holm, *Algebras and representation theory.* Springer Undergraduate Mathematics Series, Springer International Publishing, 2018.
- A. Zimmermann, *Representation Theory – a homological algebra point of view.* Algebra and Applications 19, Springer, Cham, 2014.

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