

Course:	Operator algebras and Hilbert modules	
Teacher(s):	Dragan S. Djordjević	
Course status:	Elective	
ECTS:	12	
Prerequisites:	None	
Goal		
Understanding classical results related to C*-algebras, von Neumann algebras and Hilbert C*-modules		
Outcomes		
Student can solve some problems concerning C*-algebras, von Neumann algebras and Hilbert C*-modules		
Contents		
Theoretical lectures:		
• C*-algebras; spectrum and homomorphisms; states: positive cones: approximative units; representations of positive linear functional; extreme point of the unit ball; finite dimensional C*-algebras; C*-algebra of operators on Hilbert space; locally convex topologies: Gelfand-Naimark -Segal theorem. • von Neumann algebras; weakly closed algebras; double commutativity theorem; polar decomposition and absolute value of functional; conjugate space and topological properties; universal coverings. • Hilbert C*-modules; universal module; bimodules and Morita equivalence; bounded and adjoint operators; compact operators; full Hilbert C*-modules, dual modules,; Banach compact operators; модули; C*-Fredholm operators; equivariant Fredholm operators.		
Recommended bibliography		
1. M. Takesaki, Theory of operator algebras I, Springer, Berlin – Heidelberg – New York, 2002. 2. B. Blackadar, Operator algebras: theory of C*-algebras and von Neumann algebras, Springer, Berlin – Heidelberg, 2006. 3. V. M. Manuilov, E. V. Troitsky, Hilbert C*-modules, American Mathematical Society, Providence, Rhode Island, 2005. 4. E. C. Lance, Hilbert C*-modules – a toolkit for operator algebraists, Cambridge University Press, Cambridge, England, 1995.		
Number of classes per week	Theoretical: 4	Practical:
Methods of teaching		
Group, individual, interactive.		
Knowledge rating (max 100 points)		
Knowledge estimation: Seminars: 30 points Final exam: 70 points		