Program	Level of studies		**First cycle studies**		
	Program name		**Physics**		
Course name	**MATHEMATICAL METHODS OF PHYSICS III**				
Course ID	Semester	Course status	ECTS credits		L+E
PTH7411	**VII**	**ELECTIVE**	**4**		**2+1**
Lecturer	**Prof. dr. Aner Čerkić**				
Aims and intended learning outcomes	Aim of the course is to introduce students into methods of the group theory and group representations, and into their applications to the description and analysis of the physical symmetries. Expected outcomes: Adopting the basic ideas in the finite group theory. Mastering the mathematical apparatus of the group theory. Getting acquainted with discrete group symmetries and with their applications in physics.				

Course content
Group definition. Cayley table. Subgroup. Normal subgroup. Factor group. Conjugacy classes. Group representation. Dihedral group. Isomorphism and homomorphism. Similarity transformation. Direct sum. Direct product. Projection operator. Schur's lemma. Characters of representation. Young tableaux.

Student workload (hours)		Grading		
Lectures and Exercises	45	Assessment method		Points
Exam preparation	40			
Assignments	10			
Other	5	Midterm exam		50
Total	100	Final exam		50
		Total		100

Literature

Mandatory literature:
    1. I. Doršner, *Simetrije u fizici*, Prirodno-matematički fakultet Sarajevo, Sarajevo, 2013.
 	
Additional literature:
    1. H. F. Jones, Groups, *Representations and Physics*, 2nd edition, Taylor & Francis, 1998.
    2. J. F. Cornwell, *Group Theory in Physics*, *An Introduction*, Academic Press, 1997.
    3. W. Greiner, B. Müller, *Quantum Mechanics*: *Symmetries*, 2nd edition, Springer-Verlag 2004.
    4. M. Hamermesh, *Group Theory and Its Application to Physical Problems*, Dover Publications, 1989.

Remarks