

Course Information and Lecture Schedule

Instructor: Dr. Abdulaziz Aljalal
Office: 6-109
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Office Hours: U 09.00-09:50
T 07-00-07:50 09.00-09:50
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Course page: <http://faculty.kfupm.edu.sa/phys/aljalal/phys608.htm>

Course Description from the Graduate Bulletin:

Conventional spectroscopic techniques; resonant and multiphoton laser absorption processes; fluorescence and phosphorescence; ionization, dissociation, ejected electron spectroscopy, mass spectroscopy; time-of-flight spectroscopy; photo-acoustic spectroscopy ; analysis and interpretation of spectra from gases, liquids, and solids; collisions and other perturbations; configuration interaction; multichannel quantum defect theory and analysis; supersonic jet molecular spectroscopy; polarization spectroscopy; stimulated Raman scattering, coherent effects, laser cooling and Bose-Einstein condensation.

References:

- 1- "Laser Spectroscopy", W. Demtröder, Volume 1 &2, 5th Ed.
- 2- "Introduction to Laser Spectroscopy", H. Abramczyk, 1st Ed.
- 3- "Introduction to Laser Spectroscopy", D. L. Andrews and A. A. Demidov, 2nd Ed.
- 4- "Atomic and Molecular Spectroscopy", S. Svanberg, 4th Ed.
- 5- "Principles of Laser Spectroscopy and Quantum Optics", P. R. Berman and V. S. Malinovsky

Grading Policy:

Homework	20%
Project	20%
Major 1	20%
Major 2	20%
Final	20%

Homework after the deadline will not be accepted. You may discuss your homework with other students but you are not allowed to copy their work.

The topic of the project is open, but it should be related to laser spectroscopy. It should not be taken out from your thesis or dissertation work. You are advised to choose the topic of your project as soon as possible but no later than 01 Nov. 2018. Here are some suggestions: review papers, write about advances or history, develop a computer program, or build a device. You are strongly encouraged to discuss your progress in your project with me during office hours. At the end of the term, you will submit a report and give a presentation.

As per KFUPM policy, a DN will be assigned if the number of unexcused absences exceeds one-fifth of the total class hours scheduled for the course. That is nine lectures.

KFUPM-Physics Department
Phys 608 Laser Spectroscopy-Term 181

		Activity	Note
1	02-Sep	Absorption and Emission of Light	
	04-Sep	Absorption and Emission of Light	
	06-Sep	Absorption and Emission of Light	
2	09-Sep	Widths and Profiles of Spectral Lines	
	11-Sep	Widths and Profiles of Spectral Lines	
	13-Sep	Widths and Profiles of Spectral Lines	Dropping without permanent record
3	16-Sep	Lasers	
	18-Sep	Lasers	
	20-Sep	Lasers	
4	23-Sep		National day
	25-Sep	Lasers	
	27-Sep	Lasers	
	29-Sep	Doppler-Limited Spectroscopy	Instead of 23-Sep
5	30-Sep	Doppler-Limited Spectroscopy	
	02-Oct	Doppler-Limited Spectroscopy	
	04-Oct	Doppler-Limited Spectroscopy	
6	07-Oct	Major 1	Major 1
	09-Oct	Nonlinear Spectroscopy	
	11-Oct	Nonlinear Spectroscopy	Dropping with "W"
7	14-Oct	Nonlinear Spectroscopy	
	16-Oct	Nonlinear Spectroscopy	
	18-Oct	Nonlinear Spectroscopy	
8	21-Oct	Laser Raman Spectroscopy	
	23-Oct	Laser Raman Spectroscopy	
	25-Oct	Laser Raman Spectroscopy	
9	28-Oct	Laser Spectroscopy in Molecular Beams	
	30-Oct	Laser Spectroscopy in Molecular Beams	
	01-Nov	Laser Spectroscopy in Molecular Beams	Submitting the topic of the project
10	04-Nov	Optical Pumping and Double-Resonance	
	06-Nov	Optical Pumping and Double-Resonance	
	08-Nov	Optical Pumping and Double-Resonance	Withdrawing all courses with "W"
11	11-Nov	Major 2	
	13-Nov	Time-Resolved Laser Spectroscopy	
	15-Nov	Time-Resolved Laser Spectroscopy	
12	18-Nov	Time-Resolved Laser Spectroscopy	
	20-Nov	Time-Resolved Laser Spectroscopy	
	22-Nov	Time-Resolved Laser Spectroscopy	
13	25-Nov	Time-Resolved Laser Spectroscopy	
	27-Nov	Coherent Spectroscopy	
	29-Nov	Coherent Spectroscopy	
14	02-Dec	Coherent Spectroscopy	
	04-Dec	Coherent Spectroscopy	
	06-Dec	Spectroscopy of Collision Processes	Withdrawing all courses with "WP/WF"
15	09-Sep	Spectroscopy of Collision Processes	
	11-Sep	Spectroscopy of Collision Processes	
	13-Sep	Spectroscopy of Collision Processes	Last day of classes
	16-Sep	Final	