

**NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI**

<b>Course Title</b>	ATOMIC AND MOLECULAR SPECTROSCOPY		
<b>Course Code</b>	PH663	<b>No. of Credits</b>	3
<b>Department</b>	PHYSICS	<b>Faculty</b>	Dr.N.V.Giridharan
<b>Pre-requisites Course Code</b>	-		
<b>Course Coordinator(s)</b>	Dr.N. Baskaran		
<b>Other Course Teacher(s)/Tutor(s) E-mail</b>	giri@nitt.edu	<b>Telephone No.</b>	0431-2503613
<b>Course Type</b>	<input checked="" type="checkbox"/> Core course <input type="checkbox"/> Elective course		
<b>COURSE OVERVIEW</b>			
This course deals with the interaction between the electromagnetic wave and matter.			
<b>COURSE OBJECTIVE</b>			
To understand in detail the structure of atoms and molecules.			
<b>COURSE OUTCOMES (CO)</b>			
To gain knowledge on the most common atomic and molecular spectroscopic methods and the atomic and molecular properties derived from them.  To gain sufficient knowledge in atomic and molecular physics to follow courses at the advanced level.			
<b>COURSE TEACHING AND LEARNING ACTIVITIES</b>			
<b>S.No.</b>	<b>Week</b>	<b>Topic</b>	<b>Mode of Delivery (includes lectures, problem solving and discussions)</b>
1	1-3	Atomic Spectra	Chalk and talk/ power point
2	4-6	Atoms in External Fields and Resonance Spectroscopy	Chalk and talk/ power point
3	7-9	Microwave Spectroscopy and IR Spectroscopy	Chalk and talk/ power point
4	10-12	Raman Spectroscopy	Chalk and talk/ power point
5	13- 15	Electronic Spectroscopy	Chalk and talk/ power point

COURSE ASSESSMENT METHODS				
S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1.	Quiz-I	4 <sup>th</sup> Week (On completion of UNIT-I)	30 min	10%
2.	Mid semester exam	10 <sup>th</sup> Week (Upto III units)	90 min	30%
3.	Quiz-II	12 <sup>th</sup> Week (On completion of Unit-IV)	30 min	10%
4.	End Semester exam	16 <sup>th</sup> Week	180 min	50%

ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals, etc

### Text Books

1. Colin N. Banwell, Fundamentals of Molecular Spectroscopy, 4th edition, McGraw-Hill, New York (2004).
2. G. Aruldas, Molecular Structure and Spectroscopy, Prentice Hall of India, New Delhi (2002).
3. S.L. Gupta, V. Kumar and R.C. Sharma, Elements of Spectroscopy, Pragati Prakashan, Meerut (1995).

### Reference Books

1. Manas Chanda, Atomic Structure and Chemical Bond, Tata McGraw-Hill, New Delhi (2003).
2. Harvey Elliott White, Introduction to Atomic spectra, McGraw-Hill Kogakusha,
3. Arthur Beiser, Concepts of Modern Physics, 6th edition, Tata McGraw-Hill, New Delhi (2003).
4. B.P. Straughan & S. Walker, Spectroscopy: Vol. I, Chapman and Hall (1976). 4. G.M Barrow, Introduction to Molecular Spectroscopy, McGraw Hill (1986).

**COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)**

Feedback from the students during class committee meetings.

Feedback through questionnaire at the end of the semester.

**COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)**

1. Attending all the assessments (Assessment 1 to 4) is mandatory for each student.
2. Those who are absent for any one of the assessment tests (Quiz I/Mid semester/Quiz II) on genuine grounds, shall be given an opportunity only once for the retest.
3. 75 % attendance is mandatory. Relaxation on attendance will be considered only for those having genuine medical reasons (have to produce medical certificate).

4. The retest will be conducted before the end semester exam and the portions will be upto Unit IV.
5. Those who fail exam in the course can appear for the supplementary exam.
6. Those who indulge in malpractice such as copying, plagiarism shall have to redo the course.

**ADDITIONAL COURSE INFORMATION**

The course teacher is available for consultation/discussion in person. Queries/doubts/clarifications may also be emailed to the course teacher directly at giri@nitt.edu.

**FOR SENATE'S CONSIDERATION**

Course Faculty

N. V. Ch  
11/7/16

CC-Chairperson

N. Basher

HOD

N. Jopala  
11-7-16