

Course:	Atomic and Molecular Physics
Module Level:	Undergraduate
Code:	FIT310
Sub-heading, if applicable:	-
Courses included in the module, if applicable:	-
Semester/Term:	5th / Third Year
Module Coordinator:	Febdian Rusydi, Ph.D
Lecturer(s):	Febdian Rusydi, Ph.D and Andi Hamim Zaidan, Ph.D
Language:	English
Classification within the Curriculum	Compulsory Course / Elective Course
Teaching format / class hours per week during semester:	2 hours of lectures (50 minutes/hour)
Workload:	2 hours of lectures, 2 hours of structural activities, 2 hours of individual study, 14 weeks per semester, and total of 84 hours per semester 2.6 ECTS*
Credit Points:	2
Requirement(s):	Quantum Physics, Mathematical Physics III
Learning Goals/Competencies:	<p>General Competence (Knowledge) : Students learn the electronic structure of atoms and molecules system in the ground state according to quantum perspective.</p> <p>Specific Competence:</p> <ol style="list-style-type: none"> 1. Ability to configure the electronic structure of atoms and molecules in the ground state. 2. Ability to explain physical and chemical bonding based on the electronic structure. 3. Familiar with the concept of orbital interaction.

<p>Contents:</p>	<p>After learning the Schroedinger equation for hydrogen atom in FIT301 Quantum Physics, here students learn to apply the solution for atomic and molecular systems. The focus is on the electronic structure in the ground states. Using the electronic structure, students learn to utilize hydrogen-like orbital to explain various physical and chemical bonding between atoms and molecules.</p> <p>-----</p> <table border="1"> <thead> <tr> <th>Competence</th> <th>Literature</th> <th>Chapter</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>5</td> </tr> <tr> <td>2</td> <td>2</td> <td>9, 10, 12</td> </tr> <tr> <td>3</td> <td>3</td> <td>1, 2</td> </tr> </tbody> </table> <p>-----</p>	Competence	Literature	Chapter	1	1	5	2	2	9, 10, 12	3	3	1, 2
Competence	Literature	Chapter											
1	1	5											
2	2	9, 10, 12											
3	3	1, 2											
<p>Soft Skill Attribute</p>	<p>Effort and ethic.</p>												
<p>Study/Exam Achievements:</p>	<p>Passing grade is D (equivalent of score 40.0 of 100.0).</p> <p>The score is determined by one assignment (40%) and one final task (60%).</p> <p>Score to grade conversion:</p> <p>A : 75.00 — 100.00 AB : 70.00 — 74.99 B : 65.00 — 69.99 BC : 60.00 — 64.99 C : 55.00 — 59.99 D : 40.00 — 54.99 E : 00.00 — 39.99</p>												
<p>Learning Methods:</p>	<p>Lecturing, homework, tutorial</p>												
<p>Form of Media:</p>	<p>Whiteboard, projector.</p>												
<p>Literature(s):</p>	<ol style="list-style-type: none"> 1. David Griffiths. Introduction to Quantum Mechanics, 2nd edition, Pearson Education, 2005 2. Robert Eisberg and Robert Resnick, Quantum Physics of Atoms, Molecules, Solid, Nuclei, and Particles, 2nd edition, John Wiley and Sons, 1985 3. Thomas Albright, Jeremy Burdett, and Myung-Hwang Whangbo, Orbital Interaction in Chemistry, 2nd edition, John Wiley & Sons, 2014 												
<p>Notes:</p>	<p>*Total ECTS={total hours workloadx50 min}/60 min}/25 hours Each ECTS is equals with 25 hours</p>												

