

Course:	Atomic and Molecular Computing
Module Level:	Undergraduate
Code:	FIT309
Sub-heading, if applicable:	-
Courses included in the module, if applicable:	-
Semester/Term:	6th / 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:	3 hours of lectures (50 minutes/hour)
Workload:	3 hours of lectures, 3 hours of structural activities, 3 hours of individual study, 14 weeks per semester, and total of 126 hours per semester 4.2 ECTS*
Credit Points:	3
Requirement(s):	(FIT310) Atomic and Molecular Physics
Learning Goals/Competencies:	<p>General Competence (Knowledge) : Students learn <i>computationally</i> 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 extract information from the potential energy surface 2. Ability to calculate the ground state energy of atoms and molecules. 3. Ability to construct electronic structure of atoms and molecules in ground states.

Contents:	<p>This course is designed to train students using computation method to study electronic structure of atoms and molecules. It is an extension of FIT310 Atomic and Molecular Physics.</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>1</td> </tr> <tr> <td>2</td> <td>1</td> <td>2, 3</td> </tr> <tr> <td>3</td> <td>1</td> <td>4, 5</td> </tr> </tbody> </table> <p>-----</p>	Competence	Literature	Chapter	1	1	1	2	1	2, 3	3	1	4, 5
Competence	Literature	Chapter											
1	1	1											
2	1	2, 3											
3	1	4, 5											
Soft Skill Attribute	Effort and ethic.												
Study/Exam Achievements:	<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>												
Learning Methods:	Lecturing, homework, tutorial												
Form of Media:	Whiteboard, projector.												
Literature(s):	<ol style="list-style-type: none"> 1. Jan Jensen, Molecular Modeling Basics, CRC Press, 2010 2. Christopher Cramer, Essentials of Computational Chemistry: Theories and Models, 2nd edition, John Wiley & Sons, 2004 3. James Foresman and Æleen Frisch, Exploring Chemistry with the Electronic Structure Methods, Gaussian, 2015 												
Notes:	<p>*Total ECTS={total hours workloadx50 min}/60 min}/25 hours Each ECTS is equals with 25 hours</p>												