

Subject (English)	Elementary Particle Physics		Semester	Fall	Day/Slot	Wed. / 3 rd 13:00-14:30																																					
科目名 (日本語)	素粒子物理学																																										
Course Code	VJ216F33	Course Numbering	SPH-PHY813E		Period	Oct. 3, 2018 - Jan. 23, 2019																																					
Instructor (Post)	Fumihiko Suekane (Associate Professor)				Campus	Aobayama																																					
					Building	Science Complex B [H-03]																																					
Faculty	Faculty of Science		Credits	2	Class Room	743																																					
Class subject	Elementary Particle Physics																																										
Object and summary of class	<p>The purpose of the elementary particle physics is to study building blocks of our world and to understand us through their functions. In this lecture, elementary particles and their interactions, as well as how they were observed by various experiments, will be explained by putting emphasis on their phenomenological aspects.</p>																																										
Keywords	quark, neutrino, gauge boson, Higgs particle, strong interaction, weak interaction electromagnetic interaction, standard model, particle detector, statistical treatment of data																																										
Goal of study	<p>The goal of this lecture is to learn the basic knowledge of the elementary particles and their interactions and to learn how we have come up to the current understandings.</p>																																										
Contents and progress schedule of class	<p>In the first lecture, the course guidance will be made.</p> <p>The following subjects will be taught taking one or two lectures per subject.</p> <ul style="list-style-type: none"> * Introduction to the elementary particle physics * Basics of special relativity * Basics of quantum mechanics * Members of elementary particles (quarks, neutrinos, leptons, gauge bosons, Higgs particle) * Three interactions (electromagnetic, strong, weak interactions) * Various effects of the interactions (scattering, binding, decay, symmetries) * Experiment of particle physics (statistic treatment of the data, how elementary particles are detected) * Key ideas to unify the various aspects of the elementary particles. * The standard model of elementary particle physics. 																																										
Schedule	<table border="1"> <thead> <tr> <th>No.</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> </tr> </thead> <tbody> <tr> <td>Date</td> <td>10/3</td> <td>10/10</td> <td>10/24</td> <td>10/31</td> <td>11/7</td> <td>11/14</td> <td>11/21</td> <td>11/28</td> </tr> <tr> <td>No.</td> <td>9</td> <td>10</td> <td>11</td> <td>12</td> <td>13</td> <td>14</td> <td>15</td> <td rowspan="2" style="text-align: center;">/</td> </tr> <tr> <td>Date</td> <td>12/5</td> <td>12/12</td> <td>12/19</td> <td>12/26</td> <td>1/9, '19</td> <td>1/16</td> <td>1/23</td> </tr> </tbody> </table>								No.	1	2	3	4	5	6	7	8	Date	10/3	10/10	10/24	10/31	11/7	11/14	11/21	11/28	No.	9	10	11	12	13	14	15	/	Date	12/5	12/12	12/19	12/26	1/9, '19	1/16	1/23
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Date	12/5	12/12	12/19	12/26	1/9, '19	1/16	1/23																																				
Preparation	nothing special																																										
Record and evaluation method	Class participation record and two homework achievements.																																										
Textbook and references	TBD																																										
Self study	noting special																																										
In addition	-																																										