LESSON PLAN (1-3)

1. Faculty / Study Program : FMIPA / Chemistry
2. Course & Code : Inorganic Chemistry I, KIM 109
3. Number of SCU (SCU (SKS)) : Theory : 3 SCU (SKS), Practicum : –
4. Semester and Time : Sem :3/5 , Time : 3 x 150 minutes
5. Basic Competency :
   Describing the atomic structure: hydrogen atom spectrum, Bohr atomic theory, soft structure theory, Schrödinger wave equation, electronic configuration stability, orbital screening effect, and effective core charge. Element periodic system, element classification and chemical aspect of periodicity.

6. Indicator of achievement :
   Students are able to:
   1. explain definition of modern atomic theory.
   2. explain the Bohr atomic theory, its application and its disadvantage.
   3. describe the element periodic system, element classification and the chemical aspect of periodicity.

7. Main Topics / Segment of Subject :

   ATOMIC STRUCTURE:
   Hidrogen atom spectrum, Dalton atomic theory, Rutherford atomic Theory, Bohr atomic theory, soft structure theory, Heisenberg uncertainty, Schrödinger wave equation, electronic configuration stability, orbital screening effect, and effective core charge.

   PERIODIC ELEMENT SYSTEM:
   Periodic Element System, Element Classification and Periodicity properties

7. Activity in Class :

<table>
<thead>
<tr>
<th>Componen - Stage</th>
<th>Description of Activity</th>
<th>Estimated Time</th>
<th>Method</th>
<th>Media</th>
<th>Source Material/reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presenting (Main)</td>
<td>Atomic Structure: - Hidrogen atom spectrum Bohr atom theory, its application and disadvantage - Wavelength mechanics atom theory (atomic orbital symmetry s,p,d,f) - Core effective charge Periodic Element System: - Periodic Element System</td>
<td>130 mins 110 mins 40 mins 150 mins</td>
<td></td>
<td></td>
<td>p. 45-50</td>
</tr>
</tbody>
</table>
- Element classification
- Periodicity properties

Concluding remarks

Follow-up Individual learning

8. Evaluation: Exercises (p.43 and p.66)

Yogyakarta, 26 October 2013

Approval Lecturer,
Head of Department

Dr. Hari Sutrisno
NIP. 19670407 199203 1 002

Dr Cahyorini Kusumawardani
NIP: 197707232003122001
LESSON PLAN (4-5)

1. Faculty / Study Program : FMIPA / Chemistry
2. Course & Code : Inorganic Chemistry I, KIM 109
3. Number of SCU (SKS) : Theory : 3 SCU (SKS), Practicum : –
4. Semester and Time : Sem :3/5 , Time : 2 x 150 minutes
5. Basic Competency :

Describing definition of chemical bonding: the theory and the formation, Valence-hybridization bond, VSEPR theory

6. Indicator of achievement :

Students are able to:

1. explain the chemical bonding, the type of the bonding, bonding formation and chemical structure
2. explain about covalent bonding, ionic bonding and its consequences
3. identify the chemical bonding type of molecule
4. explain the VSEPR theory and its application
5. apply the type of chemical bonding to molecular system

7. Main Topics / Segment of Subject :

MOLECULAR STRUCTURE

Definition of chemical bonding, covalent bonding, ionic bonding, valence bond theory, hybridization, VSEPR theory

8. Activity in Class :

<table>
<thead>
<tr>
<th>Componen - Stage</th>
<th>Description of Activity</th>
<th>Estimated Time</th>
<th>Method</th>
<th>Media</th>
<th>Source Material/reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>Syllabus, Basic Competency, Indicator</td>
<td>5-10 mins</td>
<td>Class Teaching</td>
<td>LCD, Power points</td>
<td></td>
</tr>
<tr>
<td>Presentation (main)</td>
<td>Definition, Chemical bonding, covalent bonding, ionic bonding, valence bond theory, hybridization concept, molecular symmetry VSEPR Theory</td>
<td>150 mins</td>
<td>LCD, Power point</td>
<td><strong>Textbook</strong> Common Textbook Kimia Anorganik 1 (KH Sugiyarto) p. 67-90</td>
<td></td>
</tr>
</tbody>
</table>

| Concluding remark | |
| Follow-up | Individual learning |

9. Evaluation: Exercises (p.91)
Yogyakarta, 26 October 2012

Approval
Head of Department

Dr. Hari Sutrisno
NIP. 19670407 199203 1 002

Dr Cahyorini Kusumawardani
NIP: 197707232003122001
LESSON PLAN (6-8)

1. Faculty / Study Program : FMIPA / Chemistry
2. Course & Code : Inorganic Chemistry I, KIM 109
3. Number of SCU (SKS) : Theory : 3 SCU (SKS), Practicum : –
4. Semester and Time : Sem :3/5 , Time : 3 x 150 minutes
5. Basic Competency :
   Describing concept of acid-base: Bronsted-Lowry theory, bininary acid, oxy acid, other acid-base theory
6. Indicator of Achievement :
   Students are able to
   1. describe the concept of acid-base
   2. define the Bronsted-Lowry acid-base strengthness
   3. explain acid-base theory

ASAM BASA
4.1. Pendahuluan, Teori Asam Basa Bronsted - Lowry, Tetapan Keseimbangan Asam-Basa
4.2. Kekuatan Asam-Basa Bronsted - Lowry, Asam-asam Biner, Asam-asam Oksi
4.3. Asam-Basa dalam sisitem pelarut, Asam-Basa Lewis, Lux-Flood, Asam-basa Lunak-Keras, dan Superasam

7. Main Topics / Segment of Subject :
   Concept of acid-base: Bronsted-Lowry theory, bininary acid, oxy acid, Lewis acid-base, Lux-Flood acid-base, Hard-Soft Acid-Base, Superacid

8. Activity in Class :

<table>
<thead>
<tr>
<th>Componen - Stage</th>
<th>Description of Activity</th>
<th>Estimated Time</th>
<th>Method</th>
<th>Media</th>
<th>Source Material/reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>Syllabus, Basic Competency, Indicator</td>
<td>5-10 mins</td>
<td>Class Teaching</td>
<td>LCD, Power points</td>
<td></td>
</tr>
<tr>
<td>Concluding Remark</td>
<td></td>
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</tr>
<tr>
<td>Follow up</td>
<td>Individual Learning</td>
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</tbody>
</table>

9. Evaluation: Exercise (p. 106)
Mid-semester Exam, 120 menit

Approval
Head of Department

Yogyakarta, 26 October 2013
Lecturer,

Dr. Hari Sutrisno
NIP. 19670407 199203 1 002

Dr Cahyorini Kusumawardani
NIP: 197707232003122001
LESSON PLAN (9-10)

1. Faculty / Study Program : FMIPA / Chemistry
2. Course & Code : Inorganic Chemistry I, KIM 109
3. Number of SCU (SKS) : Theory : 3 SCU (SKS), Practicum : –
4. Semester and Time : Sem :3/5 , Time : 2 x 150 minutes
5. Basic Competency : Describing chemical reaction: non redox and redox reaction

6. Indicator of Achievement :
   Students are able to,
   1. describe about nonredox reaction
   2. explain redox reaction
   3. identify chemical reaction

7. Main Topics / Segment of Subject :
   CHEMICAL REACTION: Nonredox and redox reaction

8. Activity in Class :

<table>
<thead>
<tr>
<th>Componen - Stage</th>
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<th>Method</th>
<th>Media</th>
<th>Source Material/reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>Syllabus, Basic Competency, Indicator</td>
<td>5-10 mins</td>
<td>Class Teaching</td>
<td>LCD, Power points</td>
<td></td>
</tr>
<tr>
<td>Concluding Remark</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Follow up</td>
<td>Individual Learning</td>
<td></td>
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</tr>
</tbody>
</table>

9. Evaluation: Exercise (p. 136)

Yogyakarta, 26 October 2013

Approval
Lecturer,
Head of Department

Dr. Hari Sutrisno
NIP. 19670407 199203 1 002

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NIP: 197707232003122001
LESSON PLAN (11)

1. Faculty / Study Program : FMIPA / Chemistry
2. Course & Code : Inorganic Chemistry I, KIM 109
3. Number of SCU (SKS) : Theory : 3 SCU (SKS), Practicum : –
4. Semester and Time : Sem : 3/5, Time : 1 x 150 minutes
5. Basic Competency :
   Describing Hydrogen: hydrogen isotope, chemical aspect, bonding on hydrogen, hydrogen properties
6. Indicator of Achievement :
   Students are able to:
   1. describe hydrogen properties
   2. explain hydrogen isotope, chemical aspect, bonding on hydrogen
7. Main Topics / Segment of Subject :
   HYDROGEN:
   Hydrogen isotope, chemical aspect, bonding on hydrogen, hydrate, hydrogen ion, dihydrogen preparation, hydrida, water and hydrogen bonding
8. Activity in Class:

<table>
<thead>
<tr>
<th>Componen - Stage</th>
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<th>Method</th>
<th>Media</th>
<th>Source Material/reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>Syllabus, Basic Competency, Indicator</td>
<td>5-10 mins</td>
<td>Class Teaching</td>
<td>LCD, Power points</td>
<td></td>
</tr>
<tr>
<td>Lessoning (Main)</td>
<td>Hydrogen: - Hydrogen isotope, chemical aspect, bonding on hydrogen, hydrate - Hydrogen ion, dihydrogen preparation, hydrida, water and hydrogen bonding</td>
<td>70 mins</td>
<td>LCD, Power point</td>
<td>Skeletal Models</td>
<td></td>
</tr>
</tbody>
</table>

Concluding Remark

Follow up Individual learning


Yogyakarta, 26 October 2013

Approval Lecturer,
Head of Department

Dr. Hari Sutrisno
NIP: 19670407 199203 1 002

Dr Cahyorini Kusumawardani
NIP: 197707232003122001
LESSON PLAN (12-13)

1. Faculty / Study Program : FMIPA / Chemistry
2. Course & Code : Inorganic Chemistry I, KIM 209
3. Number of SCU (SKS) : Theory : 3 SCU (SKS), Practicum : –
4. Semester and Time : Sem :3/5, Time : 2 x 150 minutes
5. Basic Competency :
   Describing about properties and preference of boron, carbon and nitrogen
6. Indicator of Achievement :
   Students are able to:
   1. explain properties and preference of boron
   2. explain properties and preference of carbon
   3. explain properties and preference of nitrogen

7. Main Topics / Segment of Subject :
   BORON, CARBON, NITROGEN:
   Properties and preference, silicone and germanium, phosphor and arcent

8. Activity in Class :

<table>
<thead>
<tr>
<th>Component - Stage</th>
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<th>Estimated Time</th>
<th>Method</th>
<th>Media</th>
<th>Source Material/reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>Syllabus, Basic Competency, Indicator</td>
<td>5-10 mins</td>
<td>Class Teaching</td>
<td>LCD, Power points</td>
<td></td>
</tr>
</tbody>
</table>
| Presentation (Main) | -BORON: properties and preferences
- CARBON: properties and preferences, silicone and germanium
| Concluding Remark | | | | | |
| Follow up | Individual learning | | | | |

Approval

Head of Department

Dr. Hari Sutrisno
NIP. 19670407 199203 1 002

Dr Cahyorini Kusumawardani
NIP: 197707232003122001

Yogyakarta, 26 October 2013
Lecturer,
LESSON PLAN (14-16)

1. Faculty / Study Program : FMIPA / Chemistry
2. Course & Code : Inorganic Chemistry I, KIM 209
3. Number of SCU (SKS) : Theory : 3 SCU (SKS), Practicum : –
4. Semester and Time : Sem :3/5 , Time : 3 x 150 minutes
5. Basic Competency :
   Describing about properties and preference of oxygen, halogen and noble gas
6. Indicator of Achievement :
   Students are able to:
   1. explain properties and preference of oxygen
   2. explain properties and preference of halogen
   3. explain properties and preference of noble gas

7. Main Topics / Segment of Subject :
   OXYGEN, HALOGEN, NOBLE GAS
   Properties and preference, oxygen anomaly, sulfur, flourine anomaly, flourine, chloride, halyde, halogen oxide, oxyhalogen acid and anion, interhalogen compound and polyhalyde ion, pseudohalogen, xenon flouride, xenon oxide.

8. Activity in Class :

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Introduction</td>
<td>Syllabus, Basic Competency, Indicator</td>
<td>5-10 mins</td>
<td>Class Teaching</td>
<td>LCD, Power points</td>
<td></td>
</tr>
<tr>
<td>Presentation (Main)</td>
<td>-OXYGEN: properties and preferences, oxygen anomaly, sulfur</td>
<td>- 80 mins</td>
<td>LCD, Power point</td>
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<tr>
<td></td>
<td>-HALOGEN: properties and preferences, flourine anomaly, flourine, chloride, halyde, halogen oxide, oxyhalogen acid and anion, interhalogen compound and polyhalyde ion, pseudohalogen</td>
<td>- 100 mins</td>
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<td></td>
<td>-NOBLE GAS: properties and preference, xenon flouride, xenon oxide</td>
<td>- 120 mins</td>
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<tr>
<td>Follow up</td>
<td>Individual learning</td>
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</tbody>
</table>
Final Examination 150 min

approval
Head of Department

Dr. Hari Sutrisno  
NIP. 19670407 199203 1 002

Dr Cahyorini Kusumawardani  
NIP: 197707232003122001

Yogyakarta, 26 October 2013
Lecturer,