Education 432: Secondary Principles & Practices
Lesson Plan Template

Lesson Plan Template	
Teachers' Name: Alexis, Victoria, Andrew, Brandon	**Grade:** 11
Subject: Chemistry	**Topic:** IUPAC Naming

A. Learning Goals & Success Criteria

What are the learning goals for this lesson? What represents success related to the learning goals?

Learning Goals:

-Prefixes for one to ten carbons in a compound

-Write general formulas for alkanes, names, molecular formulas, draw structural formulas, complete structural diagrams, condensed structural diagrams, and line diagrams using IUPAC

-IUPAC Naming Rules for alkanes

'Success':

- Able to name the ten prefixes for organic compounds (meth, eth, prop, but, pent, hex, hept, oct, no, dec)
- Knowledge of the alkane general formula (CnH2n+2)
- Ability to identify and name different Alkane compounds (prefix + 'ane')
- Able to draw Alkane compounds using complete, condensed, and skeletal methods

B. Lesson Outcomes

GCOs/Competencies:	300 - Knowledge
SCOs:	-Write the formula and provide the IUPAC name for a variety of organic compounds (319-5)
Indicators:	

C. Lesson Phases

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Intro:
Time:
10 minutes
	Introduction:
	
	• "Do now activity" (3 minutes)
	  ○ As students enter the classroom the 'Do now" instructions will be on the board
	  ▪ "The word carbon. Where do you think you've heard it before? Write down where carbon is found"
	  ○ Give students 2 minutes to write down their answers when class time starts
	  ○ Ask a few to share with the class
	  ○ Write some example on the board
	  ▪ Carbon dioxide
	  ▪ Fuels
	  ▪ Graphite
	  ▪ Living things
	  ▪ Diamonds
	  ○ Ask students to hold up there paper with there answers to add to the board examples.
	• Explaining carbon (2 minutes)
	  ○ "Carbon is the most important element on Earth, its in everything. From your pencil to your DNA. Its everywhere. Since carbon can form so many compounds, scientists need a way to name them all. That's what we'll be starting today".
	• Lesson objectives (5 minutes)
	  ○ "Today we're going to be learning how to name and tell the difference between carbon compounds called alkanes"
	  ○ Have learning goals written on the board as "the agenda". Then go over the goals on the board
	  ▪ Learn the prefixes for one to ten carbons
	  ▪ Understand the general formula for alkanes
	  ▪ Draw alkanes using complete, condensed, and line diagrams
	  ▪ Use the IUPAC naming rules for alkanes
	  ○ "By the end of today's class you'll be able to look at any simple single bonded carbon compound, be able to name it correctly and draw what it looks like in several forms."
	
	Body:

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Body:
Time:
45 minutes
	• Last class review
	  ○ Carbon has 4 valence electrons, allowing it to form 4 covalent bonds with other atoms.
	  ○ carbon Can form single (–), double (=), or triple (≡) bonds.
	  ○ The number of shared electrons changes the bond strength and length.
	  ○ Carbon atoms can link to form chains, branched chains, or rings.
	  ○ Leads to an incredible variety of molecular shapes and sizes
	• Give definition of alkanes
	  ○ Each carbon is bonded to the maximum number of atoms (either carbon or hydrogen atoms): saturated hydrocarbon
	  ○ Each molecule differs from the next molecule by the structural unit -CH_2-
	  ○ C_nH_{2n+2}
	• Show models of methane, ethane, propane and butane
	  ○ Show pictures on slide and pass around models that have been built
	• Questions:
	  ○ Heptane has 7 carbon atoms. What is the chemical formula of heptane?
	  ○ Nonane has 9 carbon atoms. What is its chemical formula?
	  ○ An alkane with 4 carbon atoms. How many hydrogen atoms does it have?
	• Straight and branched chain alkanes
	• Prefixes
	  ○ Use a table
	• Common alkyl groups
	  ○ Have these in a table as well
	• Rules for naming
	  ○ Find the root: longest continuous chain
	  ▪ Count carbons to obtain the root
	  ▪ Remember the main chain can be bent
	  ▪ If more than one chain could be the main chain, choose the chain that has the most branches
	  ○ Find the suffix: if it's an alkane it is -ane
	  ○ Give position numbers
	  ▪ Identify branches
	  ▪ Number main chain carbons starting at the carbon closest to the branch
	  ○ Find prefix
	  ▪ Name each branch as an alkyl group

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<table>
<tr>
<td>Closing:
Time:
5 minutes</td>
<td>

Give branch a position number
The number is which carbon it is attached to in the main chain
If more than one branch is present, write the names in alphabetical order with the first letter of the prefix (methyl or ethyl)
If there are two or more of the same type of branch, use multiplying prefixes such as di or tri
Use hyphens to separate words from numbers, use commas to separate numbers
When possible, put numbers in ascending order

Put the name together: prefix + root + suffix

Practice problems for naming

2,3,4-trimethylpentane: as a class
3-ethyl-3,4-dimethylhexane: as a table

Drawing alkanes

Identify the root and the suffix
Draw the main chain first
Choose one end of your carbon chain to be carbon number 1
Locate which carbons need branches
Add branches
Fill in hydrogens so each carbon has four atoms bonded to it

Practice problems for drawing

As a class do 3-ethyl-2-methylheptane
As a table do 3-methyloctane

Go over line structural drawings

Get class to try and do one for 2,3,4-trimethylhexane

Go over the textbook reading for next class

Closing:

Kahoot (5 minutes)

Students will be asked a series of questions using cromebooks

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<tr>
<td colspan="2">D. Assessment Tasks</td>
</tr>
<tr>
<td colspan="2">Briefly explain which assessment tasks you will be using and why.

Introduction Phase Assessment(s):</td>
</tr>
</table>

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Each student writes down one thing that connects to carbon and holds it up - formative

Body of Lesson Phase Assessment(s):
Formative assessment when working in groups

Closing of Lesson Phase Assessment(s):
Kahoot- formative

E. Resources

Identify any/all resources required for this lesson.

- Smartboard/computer (slides)
- Model kits
- Mini whiteboards or paper for each table
- Chromebooks
- Kahoot activity
- Textbook reading
- Kahoot Link: https://create.kahoot.it/share/chem-11-kahoot/82bd01aa-2087-4fb5-ad0d-dd16b6623b92

F. Inclusive Practices

Explain how the lesson, and what you did as the teacher, supports inclusive practice.

- Differentiated instruction available
- Allow each table to have a model kit or use of online builder