



Republic of the Philippines  
**Department of Education**  
REGION VIII - EASTERN VISAYAS

December 1, 2020

**REGIONAL MEMORANDUM**

No. **606**, s. 2020

**UTILIZATION OF THE UNIFIED MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)  
AND DEVELOPMENT AND SUBMISSION OF THE SELF-LEARNING MODULES FOR THE  
SCIENCE, TECHNOLOGY, AND ENGINEERING (STE) PROGRAM ADD-ON SUBJECTS**

To: Schools Division Superintendents  
School Heads, STE-Implementing Schools  
All Others Concerned

1. For the continuous improvement of the Science, Technology, and Engineering (STE) Program, this Office, through the Curriculum and Learning Management Division, hereby requires the implementing schools to utilize the unified Most Essential Learning Competencies (MELCs) and develop and submit the Self-Learning Modules (SLMs) for the STE Program Add-on Subjects for School Year 2020-2021.
2. The submission of the SLMs for Quarter 2 MELCs is on **December 12, 2020** and for Quarters 3 and 4 MELCs on **January 25, 2021**. The SLMs shall be submitted in digitized format (Word file) through email at [clmd.region8@deped.gov.ph](mailto:clmd.region8@deped.gov.ph) cc: [ryan.tiu@deped.gov.ph](mailto:ryan.tiu@deped.gov.ph) and [joy.bihag@deped.gov.ph](mailto:joy.bihag@deped.gov.ph).
3. The Division Management Teams are required to conduct quality assurance and review of the STE SLMs developed by the assigned writers from their respective divisions. The Education Program Supervisors for Science and Learning Resources and STE Add-on Subject Focal Persons must ensure that all SLMs have undergone the necessary development process phases or stages.
4. The STE SLMs shall likewise undergo a regional Conformance Review and shall only be utilized once distributed through the Division Focal Persons.
5. The List of the Unified MELCs for the eight STE add-on subjects will be emailed to the division focal persons.
6. Attached are the Suggested Schedule of Activities for SLM Development and the List of Assigned Writers and Content Editors per MELC from Quarters 2 to 4.



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**ISO 9001:2015 Certified**

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7. Immediate dissemination of and compliance with this Memorandum are desired.

  
**RAMIR B. UYTICO EdD, CESO IV**  
Director IV 

Enclosures: As stated

References: None

To be indicated in the Perpetual Index under the following subjects:

LEARNING RESOURCES      MODULES      SLM      SCIENCE      STE

CLMD-RRT



Enclosure No. 1 to RM No. 606, s. 2020

**Suggested Schedule of Activities for SLM Development**

<b>DATE</b>	<b>ACTIVITY</b>
<b>For Quarter 2 MELCs' SLMs</b>	
November 23 – 27, 2020	SLM Writing
November 30 – December 5, 2020	Content Evaluation
December 7 – 8, 2020	SLM Content Revision based on the CE
December 9 – 10, 2020	Language Editing
December 11, 2020	Lay out & Finalization
December 12, 2020	Submission to Focal Person
<b>For Quarter 3 and 4 MELCs' SLMs</b>	
January 4 - 6, 2021	SLM Writing
January 7 - 13, 2021	Content Evaluation
January 14 - 16, 2021	SLM Content Revision based on the CE
January 18 - 20, 2021	Language Editing
January 21 - 23, 2021	Lay out & Finalization
January 25, 2021	Submission to Focal Person

*Note: This is an indicative schedule. The Division can adjust the date in the conduct of the activities on the provision that the deadline for submission be met.*

**ASSIGNMENT AS REGIONAL SLM WRITERS AND EDITORS**  
**Environmental Science**

QUARTER	WEEK	MOST ESSENTIAL LEARNING COMPETENCIES	WRITERS	EDITORS
Second	1	Describe the composition and layers of the atmosphere	Sherika Mara D. Agbat Cherrybeth Tabada	Precious Rhoilyn B. Rosales Sarah Melita F. Barcelona
	2	Describe the distribution and properties of water	Annabel G. Gentallan Ma. Theresa D. Cabato-an	Jinky M. Villar Marian M. Comillo
	3-4	Explain the indicators of air, water and soil quality	Angelyn R. Magluyan Eleonor Rose L. Lim	Joyce S. Baulita Genoveva A. Castaneda
	5	Describe the type of natural resources in the Philippines	Mayra Vi L. Castulo Exumar R. Olarte	Annabelle A. Quidit Irene E. Molina
	6	Describe the state of the Philippine environment	Annabelle A. Quidit Irene E. Molina Precious Rhoilyn B. Rosales Mary Ann Cajés Nancy B. Beronio	Mayra Vi L. Castulo Exumar Olarte
	7	Design activities that would show advocacy in conserving and preserving the environment	Rose D. Arcosiba Jaycel Sabinay Mardy Pabilonia	Elizar Mendoza Maria Salva Mae C. Quijano
Third	1-2	Describe the pollutants in the environment (Air, water and land pollution)	Rommel C. Zafrá Luz O. Sagadal	Jose Arvin M. Dogillo Ma. Irene N. Paghunasan
	3-4	Explain the causes and effects of natural disasters to humans and the environment	Shemaine Macaraig Lorraine Salazar	Evangelina Anagap Mary Jane Bantaculo
	5	Discuss the impact of climate change in the environment	Gladies Joy G. Flores Donalyn Padilla	Mary Ann Cajés Ian R. Maglines
	6	Describe how human interactions with the environment can be beneficial or harmful	Caroline Joy B. Picardal Abegail O. Dasalla	Seera B. Lim Melissa E. Pinca
	7	Conduct an advocacy in solving environmental problems and issues	Seera B. Lim Melissa E. Pinca	Abegail O. Dasalla Caroline Joy B. Picardal

Fourth	1	Describe the energy resources in the Philippines	Joanna Cristy A. Noynay Rachelle P. Timogtimog	Cherry Rose B. Daclitan Jeric Serrato
	2	Describe the utilization and exploitation of energy resources	Antonieta C. Agus Katherine Lobina Sarah Melita F. Barcelona Marian M. Comillo	Catalina Capanang Dulce Amor Beato
	3	Explain the importance of sustaining Earth's resources for future use	Josephine C. Uy Joven A. Llovía	Katherine Lobina Edwin C. Lazarra
	4	Describe the different Environmental Laws and Policies in the Philippines	Cherry Rose B. Daclitan Jeric Serrato Mary Jane Bantaculo	Joven A. Llovía Rose D. Arcosiba

**Unified Most Essential Learning Competencies (MELC)  
ICT- STE Add-on Subject**

Qtr.	Content Standard	Performance Standard	Most Essential Learning Competencies	Duration	Division Assignment/Writers	Content Author	Content Author School
Q1	The learner demonstrates understanding of: History and characteristics of computers.	The learner shall be able to:  Present how computers started and various characteristics.	<p>➤ <b>Computers: History And Characteristics</b></p> <ul style="list-style-type: none"> <li>• Know the history and foundations of development of computers;</li> <li>• Determine the characteristics of computer;</li> <li>• Identify the pros and cons of using computer</li> </ul>	Week 1	Baybay	Baybay National High School	Baybay National High School
			<p>➤ <b>Demonstrate skills in illustrating the capabilities and the limitations of computer tools.</b></p> <ul style="list-style-type: none"> <li>• Define computer</li> <li>• Identify the types of computers</li> <li>• Identify the parts of a computer               <ul style="list-style-type: none"> <li>▪ hardware</li> <li>▪ software</li> <li>▪ peopleware</li> </ul> </li> </ul>	Week 2		Roda Toledo	Janica Tigo

						Naval School of Fisheries Biliran Science High School
						Dante Jamin Ana Rose Romero
						Biliran
			Week 3			
			Week 4			
			Week 5			San Pollicarpo National High School
						Calbayog City National High School
						Abbygail Escarpe June Ortiz
						Barongan
			Week 6			

- **Define and discuss basic computer knowledge**
- Identify and describe the different types of computer
  - Identify components of computer system
  - Describe the four main types of computer hardware
  - Identify windows desktop program access points
- **Components Of Computer: Hardware**
- Identify the important components of a PC and their functions
  - Familiarize occupational health and safety procedures
  - Distinguish the different hardware tools
- **Keyboarding: Parts And Techniques**
- Identify the different parts of the keyboard
  - Able to use keyboard techniques with efficiency and accuracy
- **Components Of Computer: Software**
- Know the different OS used in operating computer
  - Familiarize the different parts of the Window OS

			<p>&gt; <b>Manifest ability to demonstrate the functionality of an operating system and its file management system</b></p> <ul style="list-style-type: none"> <li>● Discuss the purpose of operating systems</li> <li>● Use commands in each operating system</li> <li>● Illustrate the systems of file management</li> <li>● Illustrate how data is stored on storage media</li> </ul> <p>&gt; <b>Demonstrate skills in preventing viruses and other malicious code that effects computers</b></p> <ul style="list-style-type: none"> <li>● Describe a computer virus</li> <li>● Determine some virus symptoms</li> <li>● Differentiate and give examples of viruses</li> <li>● Familiarize with the use of anti-virus software</li> </ul>	<p>Week 7</p> <p>Week 8</p>	<p>Calbayog</p>	<p>Marina Casillano</p> <p>Pamela Abellar</p>	<p>Sta. FE National High School</p> <p>ESNCHS</p>
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Qtr.	Content Standard	Performance Standard	Most Essential Learning Competencies	Duration	Division Assignment/Writers	Content Author	Content Author Schools
Q2	<p>The learner demonstrates understanding of:</p> <p>Different features of Microsoft word</p>	<p>The learner shall be able to:</p> <p>Familiarize the different tool bars and their functions found in MS word interface.</p>	<p>&gt; <b>Introduction Microsoft Word</b></p> <ul style="list-style-type: none"> <li>• Navigate the interface effectively</li> <li>• Use and familiarize the different toolbars in MS Word</li> <li>• Use the different features of MS Word:               <ul style="list-style-type: none"> <li>• using drawing toolbars</li> <li>• inserting images and clip arts</li> <li>• adding watermarks, page number and border</li> <li>• inserting table and graph</li> </ul> </li> </ul>	Week 1	Biliran Borongan	<p>Pamela Abellar</p> <p>Dante Jamin</p>	<p>ESNCHS</p> <p>Naval School of Fisheries</p>
			<p>&gt; <b>Create bibliography, citation and references in APA, MLA and Chicago format using MS Word Reference feature. Insert Table of Contents and footnote using MS Word Reference feature.</b></p> <p>&gt; <b>Work with MS Word 2010</b></p> <ul style="list-style-type: none"> <li>• Familiarize the Ribbon and new Backstage view</li> <li>• Create new blank documents</li> <li>• Open existing document</li> <li>• Identify ways in modifying the MS document</li> <li>• Check spelling and grammar</li> <li>• Determine the process in working with columns</li> <li>• Illustrate steps in inserting textboxes and word art</li> <li>• Demonstrate the steps in inserting clipart and pictures</li> <li>• Describe the steps in formatting pictures</li> </ul>	Week 2	Baybay Catbalogan Samar	<p>Rafael Ballais (submitted)</p> <p>Lourdes Filipina C. Uycoque (submitted)</p>	<p>Basey National High School</p> <p>Marasbaras National High School</p>

				<ul style="list-style-type: none"> <li>• Insert and edit headers and footer</li> <li>• Track changes and comments Work with hyperlinks</li> </ul>				
				<p>&gt; <b>Demonstrate skills in using word processing software to compose effective and well-organized documents</b></p> <ul style="list-style-type: none"> <li>• Identify the parts of MS Word interface</li> <li>• Create a word document</li> <li>• Edit a word document</li> <li>• Format a document</li> <li>• Insert pictures in a document</li> <li>• Insert tables in a document</li> <li>• Insert ordered lists in a document</li> <li>• Insert bulleted lists in a document</li> <li>• Merge word documents</li> <li>• Print word document</li> </ul>	Week 3	Baybay Catbalogan Samar	Janica Tigol  Myra Gabiana	Baybay National High School  Wright National High School
				<p>&gt; <b>Demonstrate skills in using MS PowerPoint in creating slide presentations.</b></p> <ul style="list-style-type: none"> <li>• Identify the parts of MS PowerPoint work area</li> <li>• Create a presentation using Template, Auto content wizard and Blank presentation</li> <li>• Save a presentation using different file types</li> <li>• Add graphics and sound in a slide</li> <li>• Insert custom animation in slide</li> <li>• Create interactive elements in a slide show</li> </ul>	Week 4	Northern Samar Calbayog	Nathaniel Flores  Judy Espinosa	Sogod National High School  Maasin City National High School
				<p>The learner shall be able to:</p> <p>Create s well-organized word document.</p>				
				<p>The learner demonstrates understanding of:</p> <p>Different features of Microsoft word</p>				
				<p>Familiarize the different tool bars and their functions found in MS PowerPoint interface.</p>				
				<p>Different features of Microsoft PowerPoint</p>				

				<p>&gt; <b>Create sample investigatory project presentations using MS PowerPoint.</b></p>	<p>Week 5-6</p>	<p>Southern Leyte Maasin City Tacloban City</p>	<p>Ma. Gina Galvez  Imelda Angello</p>	<p>Cataman National High School  New Ormoc City National High School</p>
	<p>Create a well-organized slide presentations.</p>	<p>&gt; <b>Work with MS PowerPoint 2010</b></p> <ul style="list-style-type: none"> <li>• Insert new slides</li> <li>• Modify a layout</li> <li>• Change presentation view</li> <li>• Apply slide transitions</li> <li>• Customize slide transitions</li> <li>• Add animation effects to text and objects</li> <li>• Customize text and objects</li> <li>• Insert hyperlinks using text and objects</li> <li>• Insert action buttons</li> </ul>	<p>Week 7-8</p>	<p>Ormoc City Eastern Samar Leyte</p>	<p>Jackie Lyn Burce  Lennielyn Ladlao</p>	<p>Leyte National High School  Mahaplag National High School</p>		

Qtr.	Content Standard	Performance Standard	Most Essential Learning Competencies	Duration	Division Assignment/Writers	Content Author	Content Editor/School
Q3	<p>The learner demonstrates understanding of:</p> <p>Different features of Microsoft Excel</p>	<p>The learner shall be able to:</p> <p>Familiarize the different tool bars and their functions found in MS Excel interface.</p>	<p>&gt; <b>INTRODUCTION TO MICROSOFT EXCEL</b></p> <ul style="list-style-type: none"> <li>• Able to precisely run and open MS Excel</li> <li>• Navigate the spreadsheet interface effectively</li> <li>• Familiarize the different commands and formulas of MS Excel:               <ul style="list-style-type: none"> <li>◦ entering data in spreadsheet</li> <li>◦ writing formulas in spreadsheet</li> <li>◦ using and integrating the functions and operations</li> </ul> </li> <li>• Use keyboard shortcut keys in MS Excel</li> </ul> <p>&gt; <b>Work with MS Excel 2010</b></p> <ul style="list-style-type: none"> <li>• Insert basic common functions</li> <li>• Insert chart and modify them</li> </ul>	Week 1-2	Calbayog Catbalogan	Giovanni Tegio  Rochelle Montes	Dolores National High School  Liorente National High School
		<p>Create well-organized and meaningful spreadsheets.</p>	<p>&gt; <b>Demonstrate skills in using spreadsheets managing software towards collating meaningful spreadsheets.</b></p> <ul style="list-style-type: none"> <li>• Identify the parts of MS Excel work area</li> <li>• Arrange and manage data in a spreadsheet</li> <li>• Use formulas in a spreadsheet</li> <li>• Apply basic functions in spreadsheet</li> <li>• Create graphs, table and illustrations</li> <li>• Perform Statistical analysis using MS Excel Data Analysis Tab</li> </ul>	Week 3-5	Eastern Samar	June Ortiz  Jumar Ilagan	Calbayog City National High School  Samar National School

	<p>Different features of Microsoft Publisher</p>	<p>Familiarize the different tool bars and their functions found in MS Publisher interface.</p>	<p>&gt; <b>Introduction To Publisher</b></p> <ul style="list-style-type: none"> <li>• Navigate the interface effectively</li> <li>• Familiarize the different functions of MS Publisher</li> <li>• Use keyboard shortcut keys in MS Publisher</li> </ul> <p>&gt; <b>Demonstrate skills in using MS publisher in creating informative publications.</b></p> <ul style="list-style-type: none"> <li>• Use MS Publisher software in making publications</li> <li>• Create different publications namely <ul style="list-style-type: none"> <li>◦ Invitation</li> <li>◦ Certificate</li> <li>◦ Signs</li> <li>◦ Flyer</li> <li>◦ Program</li> <li>◦ Brochure</li> <li>◦ Newsletter</li> </ul> </li> <li>• Edit a publication</li> <li>• Format a publication</li> <li>• Print publication</li> <li>• Layout investigatory project poster/display following the science fair standards</li> </ul>	<p>Week 6-8</p>	<p>Leyte Northern Samar</p>	<p>Julius Mendez  Jeanette Aliman</p>	<p>Sogod National High School  Calbiga National High School</p>
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Qtr.	Content Standard	Performance Standard	Most Essential Learning Competencies	Duration	Division Assignment/ Writers	Content Writer	Content Writer School
Q4	<p>The learner demonstrates understanding of:</p> <p>Basics of computer networks and internet use</p>	<p>The learner shall be able to:</p> <p>Make an online research about literature using the methods of citing information on the internet.</p>	<p>&gt; <b>Manifest ability to illustrate the basics of computer networks and internet use.</b></p> <ul style="list-style-type: none"> <li>• Illustrate the elements of a computer network</li> <li>• Identify the hardware needed for computer communication</li> <li>• Identify the different methods of computer communication</li> <li>• Illustrate the different services used on the internet</li> <li>• Apply proper internet ethics</li> </ul> <p>&gt; <b>Demonstrate skills in doing online literature searching Use proper methods of citing information on the internet</b></p>	Week 1-3	Ormoc City Samar	<p>Geneveve Falcon</p> <p>Gregorio Abainza</p>	<p>Sogod National High School</p> <p>Calibiran National High School</p>
	Basics of HTML (HyperText Markup Language)	Create an entertaining and informative web pages using HTML	<p>&gt; <b>THE HTML: HYPERTEXT MARKUP LANGUAGE</b></p> <ul style="list-style-type: none"> <li>• Understand the basics of HTML</li> <li>• Describe the foundations and structure of HTML</li> <li>• Familiarize the different HTML Tags</li> <li>• Perform a complete and running HTML link</li> </ul>	Week 4-5	Southern Leyte	<p>Dejie Dagoy</p> <p>Rechie Lobriguita</p>	<p>Calubian National High School</p> <p>Atty. Roque A. Marcos Memorial School</p>

			<p>➤ <b>Demonstrate skills in making entertaining and informative web pages using HTML.</b></p> <ul style="list-style-type: none"> <li>● Recognize the different types of browsers</li> <li>● Recognize different types of web pages</li> <li>● Use simple text editor to create web page by means of HTML tags</li> <li>● Edit text editor</li> <li>● Format HTML files</li> <li>● Add text animations in web page</li> <li>● Insert pictures in web page</li> <li>● Create hyperlinks</li> <li>● Insert elements in a web page</li> </ul>	Week 6-8	Tacloban City	<p>Jerica Cagadas</p> <p>Julius Mendez</p>	<p>Sogod National High School</p> <p>Sogod National High School</p>
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**List of Assigned Writers and Content Editors for the SLMs  
Research I**

Quarter	MELCS	Writer(s)	Content Editor(s)
2nd	Gather relevant literature and related studies	Ma. Ailyn C. Dacoliat	Jenett T. Dagohoy
		Joarth B. Sabulao	Jhorelyn A. Sayson
	Use proper citation (in-text citation)	Christy E. Garapan	Iryn Reyes
		Janice D. Loreto	Lyca E. Utom
	Organize sources using appropriate bibliographic format	Rammel L. Gaspan	Azenith Beth M. Yu,
		Syra R. Corong	Mary Ann B. Terrado,
		Michael G. Poldo	Virginia S. Pedrano
		Hannah B. Arceño	Noah Justine C. Sayson
	Critique a journal paper	Ronaldo C. Hitois Jr.	Galicano N. Fabi
	3rd	Apply principles of research design	Antonio Paulo C. Calixto IV
Fernando Leosa Zamora			Paula Jane M. Pipkin
Describe the types and methods of sampling		Louie Jay S. Morillo	Ian R. Maglines
		Raquel R. Abilar	Projo, Jeffrey M.
Identify standard methods and techniques used in performing experiment		Maria Lourdes B. Cuesta	
		Alex M. Gervacio	Fernando Leosa Zamora
		Ian R. Maglines	Louie Jay S. Morillo
		Paula Jane M. Pipkin	Raquel R. Abilar
		Projo, Jeffrey M.	Maria Lourdes B. Cuesta
		Mary Grace C. Olaer	Jhomar C. Isotros
4th	Apply the different methods of data collection and presentation	Eleth Thea E. Aparis	
		Naomte A. Alonzo	Elizabeth B. Lumod
	Identify the different parts of the research proposal.	Sarah Jane M. Pacot	Jeazyl M. Miano
		Elizabeth B. Lumod	Arseno C. Hinay
	Organize references using Chicago format	Jeazyl M. Miano	Bon Francis C. Gadin
		Bon Francis C. Gadin	Maricelle M. Cabardo
	Draft a research proposal in their field of interest	Maricel M. Sumbise	Sarah Jane M. Pacot
		Arseno C. Hinay	Maricel M. Sumbise
		Maricelle M. Cabardo	Naomie A. Alonzo
		Heide M. Olojan	Imelda E. Benusa



## BIOTECHNOLOGY

### UNIFIED MELC's AND ASSIGNMENT OF SLM's WRITERS AND CONTENT EDITORS

Week of the Quarter/ Grading Period	Most Essential Learning Competencies (MELCs)	WRITERS	CONTENT EDITORS
Q1/ Week 6-7	Describe the biological techniques, procedures and methods	Calbayog City Division	Leyte Division
Q2/ Week 1	Differentiate traditional biotechnology from modern biotechnology	Biliran Division	Borongan City Division
Q2/ Week 2-3	Discuss techniques or practices used in traditional biotechnology (cheese, soy sauce, vinegar making, nata de coco, etc.)	Borongan City Division	E. Samar Division
Q2/ Week 4	Identify commonly used microbes in biotechnology	Baybay City Division	Maasin City Division
Q2/ Week 5-6	Analyse the vital role of DNA, RNA and proteins in the transmission of hereditary traits	Catbalogan City Division	N. Samar Division
Q2/ Week 7	Explain how mutation in DNA affects an individual	E. Samar Division	Baybay City Division
Q3/ Week 1-2	Describe the different tools used in genetic engineering	Leyte Division	Calbayog City Division
Q3/ Week 3-4	Discuss how the genetic material are manipulated	Maasin City Division	Samar Division
Q3/ Week 5-6	Outline the main steps in recombinant DNA technology	N. Samar Division	Tacloban City Division
Q4/ Week 1-2	Describe the applications of biotechnology in health	Ormoc City Division	S. Leyte Division
Q4/ Week 3-4	Discuss the applications of biotechnology in agriculture	Samar Division	Ormoc City Division
Q4/ Week 5-6	Cite the application of biotechnology in industry and environment	S. Leyte Division	Biliran Division
Q4/ Week 7	Make informed decisions in dealing with matters related to moral concepts and behavior in relation to applications of biotechnology	Tacloban City Division	Catbalogan City Division

## ASSIGNMENT OF THE DIFFERENT DIVISIONS IN CRAFTING THE SLM's FOR CONSUMER CHEMISTRY

COMPETENCY	WRITERS	CONTENT EDITORS
<b>Quarter 2</b>		
<p><b>Week 1 - Describe the properties, structure, classification and functions of proteins, carbohydrates, and lipids</b></p> <ol style="list-style-type: none"> <li>1. Describe the properties</li> </ol> <p>Structure, classification and functions of proteins</p> <ol style="list-style-type: none"> <li>2. Explains what happens to proteins when digested by the body</li> <li>3. Discuss the role played by enzyme food digestion</li> <li>4. Explain how the human body uses the nutrients and energy generated by the products of protein digestions.</li> <li>5. Recognize the structure of monosaccharides</li> <li>6. Describe the properties of monosaccharides</li> <li>7. Recognize the structure of disaccharides *Recognize the structure of polysaccharides</li> <li>8. Describe the properties of carbohydrates</li> <li>9. Discuss the functions of carbohydrates</li> </ol>	<p><b>Borongan City</b> Priscila Escoto Rowena Latoja</p>	<p>Aiza S. Delis Ramon R. Abilar</p>
<p><b>Week 2</b> <b>Describe the chemical properties of food preservatives, artificial sweetening agents and food additives</b></p> <ol style="list-style-type: none"> <li>1. Identify the different groups of preservatives.</li> <li>2. Classify the different groups of preservatives.               <ol style="list-style-type: none"> <li>a. antimicrobial</li> <li>b. anti-oxidant</li> <li>c. anti-enzymatic</li> </ol> </li> <li>3. Explain the function of food preservatives.</li> <li>4. Describe the chemical properties of food preservatives.</li> </ol>	<p><b>Baybay City</b> Kristine S. Lombardi</p>	<p>Nilo C. Sanosa Elsie P. Alcaraz</p>

<p><b>Week 3</b>  <b>Evaluate the use of food preservatives and artificial sweetening agents</b>  1. Identify some artificial sweetening agents on some products.  2. Differentiate artificial sweetening agents from natural sweetening agents.  3. Discuss the uses of sweetening agents to consumers</p>	<p><b>Billiran</b>  Aiza S. Delis  Ramon R. Abilar  Juliet C. Penafior  Nilo C. Sanosa  Elsie P. Alcaraz</p>	<p>Rowena A. Latoja  Kristine S. Lombardi  Karen J. Yu</p>
<p><b>Week 4</b>  <b>Explain the adverse effects of consuming products with food preservatives and additives</b>  1. Explain the adverse effects of consuming products with a food additive such as  a. food preservatives  b. food colorings  c. sweetening agents</p>		<p>-Cris Emmanuel Pili  Ramon R. Abilar</p>
<p><b>Week 5 and 6</b>  <b>Discuss the changes occurring during food processing, storage and utilization</b>  1. Define operationally food processing  2. Discuss the methods of food processing  a. canning  b. freezing  c. salting  d. fermentation etc.  3. Explain the importance of food processing  4. Discuss the changes occurring during food processing, storage and utilization on  a. meat products  b. carbohydrate products  c. beverages  d. lipids  5. Explain the effects of food processing in the nutritional quality of food</p>	<p><b>Calbayog</b>  Cris Emmanuel Pili  Karen J. Yu  Eleanor C. Catampo  Luz O. Sagadal</p>	<p>Pricila A. Escoto  Lea A. Japzon  Jemarc Y. Magbagay</p>

<b>Quarter 3</b>		
<p>Week 1-2</p> <p><b>Describe the composition, properties and uses of chemicals found in cosmetics (creams, perfumes, talcum powder and deodorants)</b></p> <ol style="list-style-type: none"> <li>1. Define and enumerate examples of household cosmetics</li> <li>2. Identify the chemicals found in cosmetic products</li> <li>3. Illustrate the chemical properties of cosmetic products</li> <li>4. Enumerate the uses of Cosmetic products</li> <li>5. Appreciate the importance of cosmetics to daily life</li> <li>6. Recognize the safety concerns in using cosmetic products</li> </ol>	<p><b>Eastern Samar</b> Jemarc Y. Magbagay Jessie B. Montes Virginia A. Rebato</p>	<p>Eloisa Marie Quila Windele G. Ofemia</p>
<p>Week 3</p> <p><b>Identify the chemicals present in soaps and detergents and their properties</b></p> <ol style="list-style-type: none"> <li>1. Identify the chemicals present in             <ol style="list-style-type: none"> <li>a. soaps</li> <li>b. detergents</li> </ol> </li> <li>2. Differentiate soaps from detergents</li> <li>3. Discuss the cleansing action of soaps and detergents</li> </ol>	<p><b>Maasin</b> Rodman Rick Adobias</p>	<p>Virginia A. Rrebato Jessie B. Montes Luz A. Sagadal</p>
<p>Week 4-5</p> <p><b>Describe the composition, properties and uses of chemicals found in dyes, insect repellants and their impact on the environment</b></p> <ol style="list-style-type: none"> <li>1. Define and describe insect repellents</li> <li>2. Explain what is pheromones</li> <li>3. Explain different applications of pheromones</li> <li>4. Classify different types of local insect repellents in terms of its composition and properties</li> <li>5. Discuss the common uses of insect repellents</li> <li>6. Explain the impact of insect repellents on the environment</li> <li>7. Illustrate the degradation and impacts of insect repellent on the environment.</li> <li>8. Explain the effects of toxic insect repellents</li> <li>9. Develop a local product or a plant-based insect repellent</li> </ol>	<p><b>Leyte</b> Eloisa Marie Quila Windele G. Ofemia Rebecca S. Tanzo Anagris P. Luang Florence L. Blones Ma. Claudine Gerryvie Losadio Edgar Dagohoy Annvie Mary D. Davis</p>	<p>Rebecca S. Tanzo Florence Blones</p>

<p><b>Week 6 Explain how advanced materials like carbon filters, ceramics and micro alloys are produced</b></p> <ol style="list-style-type: none"> <li>1. Identify the different components of             <ol style="list-style-type: none"> <li>a. carbon filters</li> <li>b. ceramics</li> <li>c. micro alloys</li> </ol> </li> <li>2. Explain how advanced materials like carbon filters, ceramics and micro alloys are produced</li> </ol>	<p><b>Northern Samar</b>          Marife S. Balanquit          Cherill R. Neri          Romeo C. Vibal</p>	<p>Annvie Mary D. Davis          Ma. Claudine Gerryvie          Losadio</p>
<p><b>Quarter 4</b></p>		
<p><b>Week 1 Describe the properties of medicine and its major classification</b></p> <ol style="list-style-type: none"> <li>1. Define medicine and trace its brief history</li> <li>2. Identify the major classification of medicines</li> <li>3. Describe the properties of each class of medicines</li> <li>4. Recognize the uses of each medicines to one's health, industry and to the environment</li> <li>5. Design a science brochure pertaining to the properties of medicines and its major classification</li> </ol>	<p><b>Ormoc</b>          Rica P. Abunda          Jonessa T. Basmayor          April V. Congsong          Grace M. Baynosa</p>	<p>Cherill Neri          Marife S. balanquit</p>
<p><b>Week 2-3</b>  <b>Compare prescription medicines from over the counter medicines in terms of their chemical properties and uses (OVER THE COUNTER DRUGS)</b></p> <ul style="list-style-type: none"> <li>• Differentiate drug from medicine</li> <li>• Identify commonly used OTC and prescription drugs</li> <li>• Compare prescription medicines from over the counter medicines in terms of their chemical properties and uses.</li> <li>• Identify the possible adverse effect of prescription drug if overdosed</li> <li>• Identify the possible adverse effect of over the counter drugs if overdosed</li> <li>• Cite the importance of prescription drugs and over the counter drugs to human health</li> </ul>	<p><b>Samar</b>          Bernard Louie A. Dabuet          Ma. Pilar A. Macalalad          Mercedes T. Consus          Paul Anthony Dapapac</p>	<p>April V. Congsong          Grace M. Baynosa          Jonessa T. Basmayor</p>

<p><b>Week 4</b>  <b>Differentiate cancer from carcinogen (CANCER, CARCINOGENS)</b></p> <ul style="list-style-type: none"> <li>• Define and differentiate cancer and carcinogen</li> <li>• Describe and discuss different types of cancer and its causes</li> <li>• Advocate ways on how we can avoid cancer</li> </ul>	<p><b>Tacloban</b>  Analyn A. Velarde  Crisce Q. Pallones  Mary Ann S. Naval  Regina S. Golong</p>	<p>Mercede T. Consus  Madonna Pajo  Ma. Pilar Macalalad</p>
<p><b>Week 5</b>  <b>Describe the properties, mode of action and effects of anticancer drugs</b></p> <ul style="list-style-type: none"> <li>• Identify anticancer drugs</li> <li>• Describe the properties of anticancer drugs, mode of action and its effects</li> </ul>	<p><b>Southern Leyte</b>  Madonna Pajo  Crisanto Gaizon</p>	<p>Mary Ann S. Naval  Regina Golong</p>
<p><b>Week 6</b>  <b>Describe the properties, mode of action and effects of homeopathic medicine (HOMEOPATHIC MEDICINE)</b></p> <ul style="list-style-type: none"> <li>• Define homeopathy or homeopathic medicine.</li> <li>• Describe the properties of homeopathic medicine</li> </ul>		

## List of Assignments of Writers and Content Editors RESEARCH II

MELC / Objective	Writers	Content Editors
<b>QUARTER 2</b>		
Conduct actual experiments and organize data in the logbook		
<ul style="list-style-type: none"> <li>Describe the different data collection techniques in qualitative and quantitative research</li> <li>Understand research ethics protocols</li> <li>Use standardized tools and instruments in collecting data</li> <li>Record/organize qualitative and quantitative data using the project data logbook</li> </ul>	<p>Richelle Baston (quanti) Rodelito Quinte (quali)</p> <p>Ananias Lara Jr. Mercia Corado</p> <p>Eufemio Adarayan Jr. Anna Margarita D. Baustista</p> <p>Christito Joyce Custodio Emma F. Giray</p>	<p>Kristine Joy Germones, Ana Lina Verana</p> <p>Evangeline Omoy, Joyce Flores</p> <p>Maria Lourdes Maringal- Daligdig Christine Casangcapan</p> <p>Robert Ygrubay, Dindo Alajas</p>
<b>QUARTER 3</b>		
Utilize appropriate statistical tools in inferential statistics, interpret data/statistical results, test hypothesis, and draw conclusion		
<ul style="list-style-type: none"> <li>Pearson Product-Moment Correlation Coefficient (Pearson r) and Spearman Rank-Order Correlation Coefficient (Spearman rho)</li> <li>Simple Linear Regression</li> <li>t-test for dependent samples and t-test for independent samples</li> <li>z-test</li> <li>ANOVA</li> <li>Chi-square test for Independence</li> </ul>	<p>Lavado, Marvin</p> <p>Altar, Jeremiah Batiquin, Jessa Q. Dejadena, Archival V. Montilla, Ira Dy, Edner A.</p>	<p>Alba, Hilda P. Morilla, Eden B. Denoy, Leizel O. Rosende, Aiza</p>

<b>RESEARCH II Quarter 4</b>			
<b>MODULE NUMBER</b>	<b>MELC / TOPIC</b>	<b>WRITERS</b>	<b>CONTENT EDITORS</b>
1	Design creative visual display for exhibit		
Module 1	Format and Important Parts of a Science Project Display	Sabulao, Joarth B. Abaigar, Angeline G. Lagarto, Nora A. Denoy, Liezel O.	Basmayor, Jonathan G. Aure Jr., Mariano Oledan, Rosita E. Aragon, Lanie O. Camarote, Nemna M. Keirulf, Chona A. Delantar, Mona Liza R.
	Preparing the Project Display Board: Guidelines and Presentation		
2	Demonstrate mastery of the research topic, and delivery/ presentation of the research project.		
Module 2.1	Creating a Good Impression on the Audience	Camarote, Nena M. Keirulf, Chona A.	Sabulao, Joarth B. Aure Jr. Mariano Lagarto, Nora A. Denoy, Liezel O.
Module 2.2	Usual Questions Asked by the Judges	Oledan, Rosita E. Delanatar, Mona Liza R	
Module 2.3	Usual procedure for Oral Presentation in a Science Congress	Aragon, Lanie O. Basmayor, Jonathan G.	
Module 2.4	Maximizing Student Success in Oral Presentation	Abaigar, Angeline G. Basmayor, Jonathan G.	



**ASSIGNMENT LIST OF SLM DEVELOPMENT  
COMPUTER PROGRAMMING**

**Grade 10**

QUARTER	MOST ESSENTIAL LEARNING COMPETENCY	WEEK	WRITER	CONTENT EDITOR/REVIEWER
1	Discuss the concept of Computer Programming	1	Juliis Dane Tante Waniwan	Randy Cabardo Bantaculo
	Explore the different Information Concepts	2	Randy Cabardo Bantaculo	Juliis Dane Tante Waniwan
	Identify the different Types of Information System	3	Analyn Domasig Lu	Teremie Joseph Ceballos Obado
	Explain the concept of Business Information System	4	Teremie Joseph Ceballos Obado	Analyn Domasig Lu
	Explain the System Development Life cycle	5	Bobby Disabelle Bateo	Michael John Subito Binal
	Trace the history of the development of computer programming	6	Michael John Subito Binal	Bobby Disabelle Bateo
2	Install various computer applications for program development	7	Rezalyn Espejo Arrago	Francis Stephen Regato Villanueva / Alma Valentino Retorca
	Apply the basic syntax of a programming language	8	Francis Stephen Regato Villanueva	Rezalyn Espejo Arrago
	Identify the types and uses of different datatypes.	1	Alma Valentino Retorca	Alison Gian Gillamac Avila
	Demonstrate working with programming language numeric data types	2	Alison Gian Gillamac Avila	Francis Stephen Regato Villanueva / Alma Valentino Retorca
	Demonstrate working with programming language character and string data types	3	Denis Lebajan Dajotoy	Francis Stephen Regato Villanueva / Alma Valentino Retorca
	Recognizes the parts of a computer program	4	Alma Valentino Retorca	Denis Lebajan Dajotoy
	Explain the process of program execution	5	Marianela Nierras Batula	Max Kevin Delantar Lumactod
	Create the algorithm of a simple programme	6	Max Kevin Delantar Lumactod	Marianela Nierras Batula
3	Design a flowchart of a simple program	7-8	Brian Jojit Bano Kitane	Jocelyn Ladrera Sayson/ Michael Steve B. Acuin
	Illustrate the use of arithmetic, logical, relational operators	1	Jocelyn Ladrera Sayson/ Michael Steve B. Acuin	Brian Jojit Bano Kitane
	Apply different control statements in a program: If..Else	2	April Espina Estigoy	Maricar Cornico Yturriaga
	Switch case statements	3	Maricar Cornico Yturriaga	April Espina Estigoy
	Counting-based loops	4	Martin Sister Adora	Marian Alegria Valencia
	Condition-based loops	5	Marian Alegria Valencia	Martin Sister Adora
	Nested control statements	6	Jesber Bantilan Nabore	John Jayson Salurio Chan
	Perform a simple case study using control statements	7-8	John Jayson Salurio Chan	Jesber Bantilan Nabore

4	<p>Create different types of functions:</p> <ol style="list-style-type: none"> <li>function with no argument and no return value</li> <li>function with no arguments and with return value</li> <li>function with arguments and no return value</li> <li>function with arguments and with return value</li> </ol> <p>Design a program using an array</p> <p>Demonstrate the use of Objects and Classes in a program</p> <p>Perform the different File I/O Operations:</p> <ol style="list-style-type: none"> <li>Create a text file</li> <li>Write to a text file</li> <li>Read data from text file</li> <li>Append data to an existing text file</li> <li>Delete a text file</li> </ol> <p>Identify, evaluate and demonstrate the different sorting algorithms:</p> <ol style="list-style-type: none"> <li>Bubble Sort</li> <li>Insertion Sort</li> <li>Selection Sort</li> <li>Merge Sort</li> </ol> <p>Design and document a program of a chosen case study</p>	1-2	<p>Jeffrey Capuyan Labor</p> <p>Gerardo Manuel Roxas</p>
		3	<p>Jeffrey Capuyan Labor</p>
		4-5	<p>Jayson Cardeno Cajate/ Eleanor Bula De La Vega</p> <p>Nerissa May Albarido Mentiza</p>
		6	<p>Nerissa May Albarido Mentiza</p> <p>Jayson Cardeno Cajate/ Eleanor Bula De La Vega</p>
		7	<p>Erdenan Son Labrador</p> <p>Loie April Jasmin Paholio / Robin Andrew S. Yboa</p>
		8	<p>Loie April Jasmin Paholio / Robin Andrew S. Yboa</p> <p>Erdenan Son Labrador</p>

## Unified MELCs with Assigned Writers and Editors

**Grade Level: Grade 10**  
**Subject: Electronics**

Quarter	Most Essential Learning Competencies	Writers	Editors
1st	Describe the properties and behavior of charges in different types of materials		
	Explain the relationship among basic quantities (voltage, current, resistance and power) in a circuit		
	Investigate the nature and role of resistors and capacitors and their effects in electronic circuits		
	Incorporate the concept of electromagnetism in the function of inductors and transformers in electronic circuits		
	Identify the basic symbols and diagrams in planning and tools in making electronic circuits		
	2nd	Explain the development and effect of semiconductors, diodes and transistors in electronic circuits.	Irene Baylon Anabelle Broñola
Discuss the characteristics and specifications of the most common linear circuits.		Jemimah Dorcas Cajefe	Aimee D. Abordo Helen Yap
Illustrate and investigate digital electronic circuits involving logic gates		Edwin Abobo Lorelle Rabaya	Michael Angelo F. Barbo Edwin Abobo Oliver Bacsal
Describe digital signal processing and control		Anthony Crisolago Jeremiah O. Vertulfo	Gerry D. Dadulla Susana L. Malig-on
Incorporate light and photoelectric effect in modern electronic devices		Janine Manlangit	Helen E. Mitra Peter John T. Masing
Explain the signal control, components, and applications of radios		Jaymelin Macapinig Menchu Canlas	Henry A. Singcol Gerlie E. Diaz
3rd	Illustrate how cellular signal system works	Lea A. Alejandrino Francis Diocton	Gelyn L. Udtohan Samson M. Adarayan Jr.
	Compare wired and wireless networking	Melody O. Berman Julian Ador	Ernesto L. Cachero Jr. Raymund Macalalad

4th	Describe the conversion of energy and control involved in audio electronics	Eleazar Barda Herbert Rodriguez	Rgy D. Socong Rommel M. Estominos
	Discuss how visual display and video technology work	Junrel Lumiguid Jessan Verano	Roy P. Bidon Malvin P. Costillas
	Discuss the mechanism of basic electronic components – sensors, actuators and controllers- involved in automation	Wilmer Cadiz Rina Amosco Susan Lagutom	Irwin Jeremias F. Yu Webster P. Maderazo Godofredo Tanjay