



1.6.4. computer-assisted  
instruction (CAI) and  
computer-assisted learning  
(CAL).



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**COLLEGE OF ENGINEERING AND INFORMATION TECHNOLOGY**  
First Semester, Academic Year 2019-2020

**SYLLABUS in ES 133 – COMPUTER AIDED DRAFTING**

**Institutional Vision, Mission, and Goals**

**Vision:**

An innovative and technologically advanced State College in Caraga.

**Mission:**

To provide relevant,

- a. high quality and sustainable instruction,
- b. research, production and extension programs and
- c. services within a culture of credible and responsive institutional governance.

**Goals:**

1. Foster application of the discipline and provide its learner with industry-based training and education particularly in engineering, technology and fisheries.
2. Conduct and utilize studies for the development of new products, systems and services relevant to Philippine life and of the global village.
3. Promote transfer of technology and spread useful technical skills, thus empowering its learners and their activities.

**Institutional Intended Learning Outcomes**

SSCT graduates are expected to:

1. Demonstrate innovation and technological skills;
2. Exhibit critical thinking, collaboration, and communication;
3. Manifest leadership, adaptability, and responsibility

**Program Goals**

The Electrical Engineering program aims to design and apply the generation, transmission, and distribution of electrical energy to produce competent engineers that exhibit positive work ethics and flexibility in work conditions for the development of Caraga.



**Program Educational Objectives and Relationship to Institutional Mission**

Program Educational Objectives	Mission		
	a	b	c
PEO 1 Innovative and knowledgeable in the latest trends in electrical engineering and demonstrate in their jobs as professional the technical expertise and practical skills.	✓	✓	✓
PEO 2 Flexible in working with multidisciplinary teams, responsible for providing solutions in electrical engineering showing attributes of professionalism and critical thinking.	✓	✓	✓
PEO 3 Engage in lifelong learning and are taking leadership roles in electrical engineering organization that are valuable to the advancement of the society.	✓	✓	✓

**Program Outcomes and Relationship to Program Educational Objectives**

Program Outcomes	Program Educational Objectives		
	1	2	3
a. Apply knowledge of mathematics and sciences to solve complex engineering problems	✓	✓	✓
b. Develop and conduct appropriate experimentation, analyze and interpret data;	✓	✓	✓
c. Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability, in accordance with standards.	✓	✓	✓
d. Function effectively on multi-disciplinary and multi-cultural teams that establish goals, plan tasks, and meet deadlines;	✓	✓	✓
e. Identify, formulate, and solve complex problems in electrical engineering;	✓	✓	✓
f. Recognize ethical and professional responsibilities in engineering practice;	✓	✓	✓
g. Communicate effectively with a range of audiences;	✓	✓	✓
h. Understand the impact of engineering solutions in a global, economic, environmental, and societal context;	✓	✓	✓
i. Recognize the need for additional knowledge and engage in lifelong learning;	✓	✓	✓
j. Articulate and discuss the latest developments in the field of electrical engineering	✓	✓	✓



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k. Apply techniques, skills, and modern engineering tools necessary for electrical engineering practice; and	✓	✓	✓
l. Demonstrate knowledge and understanding of engineering and management principles as a member and/or leader in a team to manage projects in multidisciplinary environments.	✓	✓	✓

**Course Code**  
**Course Descriptive Title**  
**Course Credit**  
**Pre-requisites/Co-requisites**

ES 133  
Computer Aided Drafting  
2 units (1 unit lecture, 1 unit lab)  
1<sup>st</sup> year standing

**Course Description**

ES 133 is a basic engineering course that deals with the concepts of computer-aided drafting (CAD); introduction to the CAD environment; terminologies; and the general operating procedures and techniques in entering and executing basic CAD commands.

**Course Intended Learning Outcomes**

Course Outcomes: At the end of the course, the students should be able to:	Program Outcomes												
	a	b	c	d	e	f	g	h	i	j	k	l	m
1. Define the terms related to computer-aided drafting:													
2. Identify the important tools use to create technical drawing in CAD:													
3. Create electronic drawings using the CAD software													
<b>Level:</b> I – Introductory E – Enabling D - Demonstrative													



**Detailed Course Syllabus**

Intended Learning Outcome	Topics	Time Frame	Teaching and Learning Activities	Assessment Tasks	Resources	Values Integration	Remarks
<p>Express understanding of the Vision and Mission statements of SSCT, including its Goals and Objectives;</p> <p>Analyze the syllabus by looking into the ILOs, Subject Matter, TLAs, Assessment Strategies, Values and References; and</p> <p>Design strategies that will help meet the requirements and obtain desired grades/marks for the course</p>	<p><b>ORIENTATION ON THE COURSE</b></p> <p><b>VMGO</b></p> <p><b>Syllabus</b></p> <p><b>Grading System</b></p>	1 hr	<p>Big Group Discussion on VMGO</p> <p>Documentary Analysis of Syllabus and Grading System</p> <p>Concept Mapping (Sunflower Map/Fishbone Map) on strategies to meet course requirements</p>	Class recitation	<p>Computer/ Projector for Power point presentation of the VMGO</p> <p>Syllabus</p>	Obedience, Punctuality, Diligence	
<p>CO3: Explain the importance, and the significance of CAD software in the Professional development;</p> <p>CO3: Express the various advantages of CAD in the design versus Conventional/</p>	1. <b>INTRODUCTION TO CAD SOFTWARE</b>	2hrs	<p><i>Socratic Strategy</i> (Q&amp;A) on the importance and significance of CAD software in the Professional development</p> <p><i>Debate</i> on the issue of CAD versus the manual drafting</p> <p><i>Brainstorming</i> of the different types of CAD version and its complexes</p>	<p>Oral recitation 10 points</p> <p>Debate scoring 1<sup>st</sup> place – 50 points 2<sup>nd</sup> place - 30 points</p>	Ppt presentation of CAD software, internet, whiteboard and marker	Appreciating the importance of CAD	



<p>manual drafting;</p> <p>CO3: State the different types of CAD version and its complexes; and</p>	<p><b>Plate #1 Standard Title Block</b></p>	<p>1.5 hrs</p>	<p><i>Individual Hands on Plate #1 Standard Title Block</i></p>	<p>Hands on in Standard Title Block Criteria: Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20 Total - 100</p>	<p>CAD software, computer set</p>		
<p>CO2: Test the CAD software in the computer.</p>	<p><b>Plate #2 Alphabets and Lines</b></p>	<p>3 hrs</p>	<p><i>Individual Hands on Plate #2 Alphabets and Lines</i></p>	<p>Hands on in Alphabets and Lines Criteria: Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20 Total - 100</p>	<p>CAD software, computer set</p>		
<p>CO1: Introduce the concept of CAD, its environment, terminologies, general operating procedure and command Techniques; and</p> <p>Co3: Compose</p>	<p><b>2. CAD DRAWING</b></p> <p><b>Plate #3 Series of Parallel Lines</b></p>	<p>2 hrs</p> <p>1.5hrs</p>	<p><i>Big group discussion on the concept of CAD, procedure and command techniques</i></p> <p><i>Individual critiquing of drawings on computer screen</i></p> <p><i>Individual Hands on Plate #3 Series of Parallel Lines</i></p>	<p>Quiz on the concept of CAD, terminologies, procedure, command techniques, etc Criteria: Identification- 20 Enumeration – 20 Essay 2 quest - 10 Total- 50 pts each</p> <p>Hands on Criteria: Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20</p>	<p>Ppt presentation on the concept of CAD, procedure and command techniques, Internet, Whiteboard and marker</p> <p>CAD software, computer set</p>	<p>Self confidence in expressing their concept in planning an establishment with the use of CAD software</p>	



series of parallel lines and grille design.	<b>Plate #4 Grille Design</b>	3 hrs	<i>Individual Hands on Plate #4 Grille Design</i>	Total - 100 Hands on Criteria: Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20 Total - 100	CAD software, computer set		
CO3: Apply the basic Commands in the application of snapping construction elements in CAD drawings; and  CO2: Compose compound figures.	<b>3.SNAPPING, CONSTRUCTION ELEMENTS</b>	2hrs	<i>Small Group Discussion on snapping and construction of elements</i>	Oral recitation on snapping, construction elements 10 points	Whiteboard and marker Ppt presentation, internet	Patience in constructing of elements	
	<b>Plate Compound Figures #5</b>	3 hrs	<i>Individual Hands on Plate #5 Compound Figures</i>	Hands on Criteria: Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20 Total - 100	CAD software, computer set		
	<b>Plate Decorative Elements #6</b>	3 hrs	<i>Individual Hands on Plate #6 Decorative Elements</i>	Hands on Criteria: Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20 Total - 100	CAD software, computer set		



CO2: Discuss the principle of dimensioning and scaling relative to the presentation of drawing techniques; and	<b>4. DIMENSIONING</b>	1 hrs	<i>Think, pair and share on the techniques of dimensioning and scaling in drawing</i>	Board work Critiquing on the techniques on dimensioning and scaling 10 points	Whiteboard and marker Ppt presentation, internet	Diligent in dimensioning and scaling in using techniques	
	<b>Plate #7 Polygons</b>	3 hrs	<i>Individual Hands on Plate #7 Polygons</i>	Hands on Criteria: Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20 Total - 100	CAD software, computer set		
	<b>Plate #8 Series of Curves and Lines</b>	3 hrs	<i>Individual Hands on Plate #8 Curves and Lines</i>	Hands on Criteria: Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20 Total - 100	CAD software, computer set		
	<b>Plate #9 Isometric Drawing of Cube</b>	3 hrs	<i>Individual Hands on Plate #9 Isometric Drawing of Cube</i>	Hands on Criteria: Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20 Total - 100	CAD software, computer set		
CO3: Apply the basic tools on the set-up commands on dimensioning or dimension-style.	<b>Plate #10 Isometric Oblique Drawing</b>	3 hrs	<i>Individual Hands on Plate #10 Isometric Oblique Drawing</i>	Hands on Criteria: Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20 Total - 100	CAD software, computer set		
	<b>MIDTERM EXAMINATION: 1 hour</b>						
CO1: Discuss the basic principles of printing and plotting	<b>5. PLOTTING, INPUTTING IMAGES</b>	2 hrs	<i>Big Group Discussion on plotting and inputting images</i>	Board Work Critiquing in plotting and inputting images 10 points	Ppt presentation on the plotting and inputting	Discipline in finishing the assigned task	





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<p>drawings, images from your computer to the printer;</p> <p>CO2: Adapt considerable amount of knowledge in operating printers in several and various application from the computer; and</p> <p>CO1: Demonstrate plotting and inputting images.</p>	<p><b>Plate #11 Isometric Drawing (Block Edge)</b></p>	1.5hrs	<p><i>Brainstorming</i> on how to plot and input images in CAD software</p> <p><i>Individual Hands</i> on Plate #11 Isometric Drawing (Block Edge)</p>	<p>images, internet, Whiteboard and marker</p>	<p>CAD software, computer set</p>		
	<p><b>Plate #12 Isometric Drawing (Bearing Hub)</b></p>	3 hrs	<p><i>Individual Hands</i> on Plate #12 Isometric Drawing (Bearing Hub)</p>	<p>Hands on Criteria: Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20 Total – 100</p>			<p>CAD software, computer set</p>
	<p><b>Plate #13 Isometric Drawing (Metal Scope)</b></p>	3 hrs	<p><i>Individual Hands</i> on Plate #13 Isometric Drawing (Metal Scope)</p>	<p>Hands on Criteria: Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20 Total – 100</p>			<p>CAD software, computer set</p>
<p>Co1: Identify basic 2d from 3d commands; and</p>	<p><b>6. 3D AND NAVIGATING IN 3D</b></p>	3 hrs	<p><i>Small Group Discussion</i> of 3D and navigating in 3D</p>	<p>Quiz in 3D Identification 20 points</p>	<p>Internet, whiteboard and marker</p>	<p>Creativity in applying the command in 3D</p>	
		3 hrs	<p><i>Individual Hands</i> on Plate #14 Isometric Drawing (Axle Bearing)</p>	<p>Hands on Criteria:</p>	<p>CAD software,</p>		



CO3: Apply the command in 3D in making plates.	<b>Plate #14 Isometric Drawing (Axle Bearing)</b>	3 hrs	<i>Individual Hands on Plate #15 Isometric Drawing (Double Angular Block)</i>	Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20 Total - 100	computer set	
	<b>Plate #15 Isometric Drawing (Double Angular Block)</b>		<i>Individual Hands on Plate #16 Isometric Drawing (Metal Scope)</i>	Hands on Criteria: Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20 Total - 100	CAD software, computer set	
	<b>Plate #16 Isometric Drawing (Metal Scope)</b>	1.5hrs		Hands on Criteria: Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20 Total - 100	CAD software, computer set	
CO2: Demonstrate the basic rendering techniques from CAD, Sketch-up, 3dmax and other rendering software.	<b>7. RENDERING</b>	3 hrs	<i>Big Group Discussion in Rendering</i>	Oral recitation in critiquing rendering techniques 10 points	Ppt presentation about Rendering, internet, whiteboard and marker	Patience demonstrating the rendering techniques. Sketch up, 3d max and other rendering software
	<b>Plate #17 Isometric Drawing (Metal Scope)</b>	3 hrs	<i>Individual Hands on Plate #17 Isometric Drawing (Metal Scope)</i>	Hands on Criteria: Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20 Total - 100	CAD software, computer set	
	<b>Plate #18 Isometric</b>	3 hrs	<i>Individual Hands on Plate #18 Isometric Drawing (Gable Roof with Fireplace)</i>	Hands on Criteria: Creativity – 30 Craftsmanship – 30	CAD software, computer set	



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	<b>Drawing (Gable Roof with Fireplace)</b>		<i>Individual Hands on Plate #19</i> Isometric Drawing (Double Gable Roof)	Perseverance – 20 Design – 20 Total - 100			
	<b>Plate #19</b> <b>Isometric Drawing (Double Gable Roof)</b>	3 hrs	<i>Individual Hands on Plate #20</i> Isometric Angular Drawing	Hands on Criteria: Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20 Total - 100	CAD software, computer set		
	<b>Plate #20</b> <b>Isometric Angular Drawing</b>	3 hrs		Hands on Criteria: Creativity – 30 Craftsmanship – 30 Perseverance – 20 Design – 20 Total - 100	CAD software, computer set		
<b>FINAL EXAMINATION: 1 hour</b>							

**References:**

- Onstot, S., AutoCAD® 2017 and AutoCAD LT ® 2017, Wiley, USA
- Mark Dix, Discovering AutoCAD® 2017, Pearson, USA
- CAD Software User's Guide and Manual
- www.tutorialbook.info AutoCAD 2018 For Architectural Design

**Course Evaluation:**

- Individual Plate Compilation
- Midterm & Final Examination



**Grading System: MIDTERM AND FINAL GRADE**

Criteria

➤ Quizzes/ Online outputs/interaction	25%
➤ Performance Tasks (Project/Assignment)	35%
➤ Major Examination (Midterm/Finals)	40%
<b>TOTAL</b>	<b>100%</b>

**Final grade = 50% MG + 50% FG**

Grade Point	Description
1.0	Excellent
1.5 – 1.1	Very Good
2.0 – 1.6	Highly Satisfactory
2.5 – 2.1	Good
2.9 – 2.6	Satisfactory
3.0	Passing
5.0	Failed due to poor performance, absences, withdrawal without notice
DRP	Dropped with approved dropping slip
INC	Incomplete requirements but w/ passing class standing. INC is for non-graduating students only
NG	No Grade

Source: *SSCT Student Handbook*

**Course Policies:**

1. Attendance sheet will be passed around and the student is responsible to sign to prove his/her presence for that sessions. This is to monitor whether absences incurred by the student is still within the allowed number of absences for a course stipulated in the Student Handbook.
2. Excuse from the class will only be honored if a Memo from the school is issued before the absence or valid excuse letter from parents/guardians is presented after the absence. No other excuses will be entertained.
3. It is a part of your education to learn responsibility and self-discipline, particularly with regards to academic honesty. Cheating is defined to include an attempt to defraud, deceive, or mislead the instructor in arriving at honest grade assessment. Plagiarism is a form of cheating that involves presenting as one's own work the ideas or work of another. Therefore, all portions of any test, project, or major examination submitted by you for a grade must be your own work, unless you are instructed to work



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collaboratively. Cheating in a major course examination by a student will entail a failing mark for the given course. Plagiarism in papers and other works will entail zero score for the said requirement.

4. The use of multiple-choice questionnaires is used during the exams. However, detailed solution to the problem should be written legibly in a clean long size bond paper.
5. Laboratory exercises will be performed individually and the reports should be submitted individually. Laboratory exercises and computations should be hand written in the Laboratory Manual using blue ink pen. For laboratory reports, include the date performed and the date submitted. The deadline for the laboratory reports will be one week after performing the exercise.
6. Unsatisfactory project will not be accepted. However, the student/group will be given a chance to improve their project. Non-submission of the project on the set deadline means an automatic final grade of 5.
7. Exemptions from taking the final examination are as follows: (1) No exam below 60%, (2) No missed quizzes/exams, (3) Laboratory reports are submitted on the specified date, (4) The project is submitted on the specified deadline, and (5) Absences do not exceed the maximum allowed.
8. This class policy serves as our written agreement for the whole semester.

**Revision History:**

Revision No.	Date of Revision	Date of Implementation	Highlight of Revision
1	August 2019	1 <sup>st</sup> Sem, AY 2019-2020	Followed OBTL Format as per CMO #101 S. 2017
2	November 2020	1 <sup>st</sup> Sem, AY 2020-2021	Followed OBTL Format as per CMO #101 S. 2017



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**Preparation, Review, and Approval:**

Prepared by:

**ARCH MARLON C. SOLLOSO, MTE (CAR)**  
Faculty

Date: Aug. 4, 2019

Checked and Reviewed by:

**ENGR. VICENTE Z. DELANTE, MEng'g**  
Program Chair, BSEE

Date: Aug. 5, 2019

Noted by:

**ENGR. ROBERT R. BACARRO, MECE, MBA**  
Dean, CEIT

Date: Aug 5, 2019

Recommended by:

**DR. RONITA E. TALINGTING**  
Campus Director

Date: Aug 5, 2019

Approved by:

**EMMYLOU A. BORJA, EdD**  
VP for Academic Affairs

Date: Aug 5, 2019



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## COLLEGE OF ENGINEERING AND INFORMATION TECHNOLOGY 1st Semester, Academic Year 2020-2021

### COURSE SYLLABUS in EE 402 – ELECTRICAL SYSTEMS AND ILLUMINATION ENGINEERING DESIGN

#### Institutional Vision, Mission, and Goals

##### Vision:

An innovative and technologically-advanced State College in Caraga.

##### Mission:

To provide relevant,

- a. high quality and sustainable instruction,
- b. research, production and extension programs and
- c. services within a culture of credible and responsive institutional governance.

##### Goals:

1. Foster application of the discipline and provide its learner with industry-based training and education particularly in engineering, technology and fisheries.
2. Conduct and utilize studies for the development of new products, systems and services relevant to Philippine life and of the global village.
3. Promote transfer of technology and spread useful technical skills, thus empowering its learners and their activities.

#### Institutional Intended Learning Outcomes

: SSCT graduates are expected to:

1. Demonstrate innovation and technological skills;
2. Exhibit critical thinking, collaboration, and communication;
3. Manifest leadership, adaptability, and responsibility.

#### Programs Goals:

The Electrical Engineering program aims to design and apply the generation, transmission, and distribution of electrical energy to produce competent engineers that exhibit positive work ethics and flexibility in work conditions for the development of Caraga.



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**Program Educational Objectives  
and Relationship to Institutional  
Mission**

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Program Educational Objectives	Mission		
	a	b	c
PEO 1 Innovative and knowledgeable in the latest trends in electrical engineering and demonstrate in their jobs as professional the technical expertise and practical skills.	✓	✓	✓
PEO 2 Flexible in working with multidisciplinary teams, responsible for providing solutions in electrical engineering showing attributes of professionalism and critical thinking.	✓	✓	✓
PEO 3 Engage in lifelong learning and are taking leadership roles in electrical engineering organization that are valuable to the advancement of the society.	✓	✓	✓

**Program Outcomes and  
Relationship to Program  
Educational Objectives**

Program Outcomes	Program Educational Objectives		
	1	2	3
a. Apply knowledge of mathematics and sciences to solve complex engineering problems	✓	✓	✓
b. Develop and conduct appropriate experimentation, analyze and interpret data;	✓	✓	✓
c. Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability, in accordance with standards.	✓	✓	✓
d. Function effectively on multi-disciplinary and multi-cultural teams that establish goals, plan tasks, and meet deadlines;	✓	✓	✓
e. Identify, formulate, and solve complex problems in electrical engineering;	✓	✓	✓
f. Recognize ethical and professional responsibilities in engineering practice;	✓	✓	✓
g. Communicate effectively with a range of audiences;	✓	✓	✓





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h. Understand the impact of engineering solutions in a global, economic, environmental, and societal context;	✓	✓	✓
i. Recognize the need for additional knowledge and engage in lifelong learning;	✓	✓	✓
j. Articulate and discuss the latest developments in the field of electrical engineering	✓	✓	✓
k. Apply techniques, skills, and modern engineering tools necessary for electrical engineering practice; and	✓	✓	✓
l. Demonstrate knowledge and understanding of engineering and management principles as a member and/or leader in a team to manage projects in multidisciplinary environments.	✓	✓	✓

**Course Code**  
**Course Title**  
**Course Credit**  
**Pre-requisites/Co-requisites**

EE 402  
Electrical Apparatus and Devices  
3 units lecture; 2 unit laboratory  
Electrical Machines 2

**Course Description**

The course provides knowledge, understanding and skills in designing electrical wiring system for residential, commercial buildings, and industrial facilities through the specifications and standards mandated by the Philippine Electrical Code and provisions from the Local Government on electrical wiring installation. The course includes illumination design and cost estimation; energy-efficient lighting systems for residential, commercial, and industrial establishments; roadway lighting, and lighting maintenance.

**Course Outcomes and Relationship to Program Outcomes**

Course Outcomes: After completing this course, the students must be able to	Program Outcomes												
	a	b	c	d	e	f	g	h	i	j	k	l	m
CO 1. Understand the concepts of the function notation to evaluate functions.			D	I	D	E	D			E			
CO 2. Apply algebraic techniques in solving equations and inequalities also in simplifying algebraic expression to analyse the given situations.			D	I	D	E	D			E			
CO 3. Understand the basic Rules and regulations in electrical installations			D	I	D	E	D			E			
CO 4. Apply the basic Rules and regulations			D	I	D	E	D			E			



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in electrical installations.														
CO 5. Design an electrical system of residential, commercial, and industrial buildings.			D	I	D	E	D					E		
CO 6. Compute electrical loads, rating of branch circuit wiring and protective devices.			D	I	D	E	D					E		
CO 7. Prepare the schematic diagram, installation plan, quantity of materials and estimate for different electrical installations.			D	I	D	E	D					E		
CO 8. Estimate the costs of materials and quantity needed by the installation of the electrical design			D	I	D	E	D					E		
CO 9. Calculate the basic problems related to Illumination Engineering, Illuminance calculations, optical and exterior lighting design.			D	I	D	E	D					E		
CO 10. Identify the different types of lamps, its characteristics & Applications, Luminaire- its function and classification, Lamp and luminaire specifications.			D	I	D	E	D					E		
CO 11. Define energy efficiency in relation to the lighting design of residential, commercial and industrial establishments.			D	I	D	E	D					E		
CO 12. Discuss the use of day lighting vs. artificial lighting in the engineering design of a structure.			D	I	D	E	D					E		
CO 13. Understand the types of roadway lighting – conventional, highmast, sign and underdeck.			D	I	D	E	D					E		
CO 14. Analyze and compute the lighting needs			D	I	D	E	D					E		
CO 15. Estimate the Lighting design requirements – mounting height restrictions, project coordination, maintenance of existing lighting, voltage drop criteria and grounding.			D	I	D	E	D					E		
CO 16. Describe methods in maintaining Lightings.			D	I	D	E	D					E		
CO 17. Perform basic mechanical and electrical test or checks in maintaining lighting fixtures.			D	I	D	E	D					E		
CO 18. Create scheduled maintenance and safety protocols.			D	I	D	E	D					E		
<b>Level:</b> I – Introductory E – Enabling D - Demonstrative														



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**Detailed Course Syllabus**

Course Outcomes	Topics	Time Frame	Teaching and Learning Activities	Assessment Tasks	Resources	Values Integration	Remarks
<p>Express understanding of the Vision and Mission statements of SSCT, including its Goals and Objectives;</p> <p>Analyze the syllabus by looking into the ILOs, Subject Matter, TLAs, Assessment Strategies, Values and References; and</p> <p>Design strategies that will help meet the requirements and obtain desired grades/marks for the course</p>	<p><b>ORIENTATION ON THE COURSE</b></p> <p><b>VMGO</b></p> <p><b>Syllabus</b></p> <p><b>Grading System</b></p>	1 hr.	<p><i>Documentary Analysis of Syllabus and Grading System</i></p> <p><i>Concept Mapping (Sunflower Map/Fishbone Map)</i> on strategies to meet course requirements</p>		<p>Computer/ Projector for PowerPoint presentation of the VMGO</p> <p>Syllabus</p>	<p>Obedience, Punctuality, Diligence</p>	



**SURIGAO STATE COLLEGE  
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"For Nation's Greater Heights"

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<p>CO1. Interpret the provisions of the Philippine Electrical Code and other electrical codes.</p> <p>CO2. Explain the basic and fundamental of codes and provisions of the Philippine Electrical Code.</p> <p>CO 3. Understand the basic Rules and regulations in electrical installations</p>	<p><b>1. Interpretation of the provisions of the Philippine Electrical Code and other electrical codes</b></p>	<p>6 hrs. lec</p>	<p>Instructor provides reading module for each topic which can be available online and offline/hardcopy (upon request).</p> <p>Students can ask the clarifications and questions through Google Classroom, Messenger Group Chat, or text message</p>	<p>Online quiz using Google classroom</p> <p>Assignments</p>	<p>Module from Instructor</p> <p>Computer/laptop/cellular phone (optional)</p> <p>Online Resources (optional)</p>	<p>Attentiveness, appreciation, and retention</p>	
<p>CO 4. Apply the basic Rules and regulations in electrical installations.</p> <p>CO 5. Design an electrical system of residential, commercial, and industrial buildings.</p> <p>CO 6. Compute electrical loads, rating of branch circuit wiring and protective devices.</p>	<p><b>2. Design of the electrical systems of residential, commercial, and industrial buildings</b></p> <p><b>a. Lighting layout</b></p> <p><b>b. Power layout</b></p> <p><b>c. Electrical loads, ratings of branch circuit wiring, and specifications of protective devices</b></p>	<p>10 hrs lec/ 44 hrs lab</p>	<p>Instructor provides reading module for each topic which can be available online and offline/hardcopy (upon request).</p> <p>Students can ask the clarifications and questions through Google Classroom, Messenger Group Chat, or text message</p>	<p>Online quiz using Google classroom</p> <p>Assignments</p> <p>Lab Design</p>	<p>Module from Instructor</p> <p>Computer/laptop/cellular phone (optional)</p> <p>Online Resources (optional)</p>	<p>Patience, Attentiveness and appreciation.</p>	



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<p>CO 7. Prepare the schematic diagram, installation plan, quantity of materials and estimate for different electrical installations.</p> <p>CO 8. Estimate the costs of materials and quantity needed by the installation of the electrical design.</p>	<p><b>3. Basics of cost estimation</b></p>	<p>9 hrs lec/ 10 lab</p>	<p>Instructor provides reading module for each topic which can be available online and offline/hardcopy (upon request).</p> <p>Students can ask the clarifications and questions through Google Classroom, Messenger Group Chat, or text message</p>	<p>Online quiz using Google classroom</p> <p>Assignments</p> <p>Lab Design</p>	<p>Module from Instructor</p> <p>Computer/aptop/cellular phone (optional)</p> <p>Online Resources (optional)</p>	<p>Patience, Attentiveness and appreciation</p>	
<b>MIDTERM EXAMINATION (2 hrs. written / 2 hrs. lab)</b>							
<p>CO 9. Calculate the basic problems related to Illumination Engineering, Illuminance calculations, optical and exterior lighting design.</p> <p>CO 10. Identify the different types of lamps, its</p>	<p><b>4. Lighting design principles, including lighting calculations</b></p>	<p>6 hrs lec/ 20 lab</p>	<p>Instructor provides reading module for each topic which can be available online and offline/hardcopy (upon request).</p> <p>Students can ask</p>	<p>Online quiz using Google classroom</p> <p>Assignments</p> <p>Lab Design</p>	<p>Module from Instructor</p> <p>Computer/aptop/cellular phone (optional)</p>	<p>Attentiveness, diligence and appreciation.</p>	



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characteristics & Applications, Luminaire- its function and classification, Lamp and luminaire specifications.			the clarifications and questions through Google Classroom, Messenger Group Chat, or text message		Online Resources (optional)		
<p>CO 11: Define energy efficiency in relation to the lighting design of residential, commercial and industrial establishments.</p> <p>CO 12: Discuss the use of day lighting vs. artificial lighting in the engineering design of a structure.</p>	<b>5. Energy-efficient lighting systems for residential, commercial, and industrial establishments</b>	6 hrs lec/20 lab	<p>Instructor provides reading module for each topic which can be available online and offline/hardcopy (upon request).</p> <p>Students can ask the clarifications and questions through Google Classroom, Messenger Group Chat, or text message</p>	<p>Online quiz using Google classroom</p> <p>Assignments</p> <p>Lab Design</p>	<p>Module from Instructor</p> <p>Computer/laptop/cellular phone (optional)</p> <p>Online Resources (optional)</p>	Diligence and perseverance.	



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<p>CO 13: Understand the types of roadway lighting – conventional, highmast, sign and underdeck.</p> <p>CO 14: Analyze and compute the lighting needs.</p> <p>CO 15: Estimate the Lighting design requirements – mounting height restrictions, project coordination, maintenance of existing lighting, voltage drop criteria and grounding.</p>	<p><b>6. Roadway lighting</b></p>	<p>6 hrs lec/10 lab</p>	<p>Instructor provides reading module for each topic which can be available online and offline/hardcopy (upon request).</p> <p>Students can ask the clarifications and questions through Google Classroom, Messenger Group Chat, or text message</p>	<p>Online quiz using Google classroom</p> <p>Assignments</p> <p>Lab Design</p>	<p>Module from Instructor</p> <p>Computer/laptop/cellular phone (optional)</p> <p>Online Resources (optional)</p>	<p>Attentiveness, appreciation, and retention</p>	
<p>CO 16: Describe methods in maintaining Lightings.</p> <p>CO 17: Perform basic mechanical and electrical test or checks in maintaining lighting fixtures.</p> <p>CO 18: Create scheduled maintenance and safety protocols.</p>	<p><b>7. Lighting maintenance principles</b></p>	<p>6 hrs lec</p>	<p>Instructor provides reading module for each topic which can be available online and offline/hardcopy (upon request).</p> <p>Students can ask the clarifications and questions through Google Classroom,</p>	<p>Online quiz using Google classroom</p> <p>Assignments</p>	<p>Module from Instructor</p> <p>Computer/laptop/cellular phone (optional)</p> <p>Online Resources (optional)</p>	<p>Attentiveness, appreciation, and retention</p>	



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			Messenger Group Chat, or text message				
<b>FINAL EXAMINATION (2 hrs. written / 2 hrs. lab)</b>							

**References:**

- M.K. Giridharan, "Electrical Systems Design: Data Handbook" , 2011
- Kao Chen, "Industrial Power Distribution and Illuminating Systems", 2018
- William H. Clark, "Electrical Design Guide for Commercial Buildings", 1998

**Course Requirements:**

- Assignment and Quizzes
- Laboratory Design
- Midterm & Final Examination

**Course Evaluation:**

<u>Criteria</u>	<u>Lecture Grade</u>
➤ Quizzes and Online outputs/interaction	20%
➤ Laboratory Activities	40%
➤ Major Exams (Midterm & Finals)	40%
<b>TOTAL</b>	<b>100%</b>

<b>Grade Point</b>	<b>Description</b>
1.0	Excellent
1.5 – 1.1	Very Good
2.0 – 1.6	Highly Satisfactory
2.5 – 2.1	Good
2.9 – 2.6	Satisfactory





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3.0	Passing
5.0	Failed due to poor performance, absences, withdrawal without notice
DRP	Dropped with approved dropping slip
INC	Incomplete requirements but w/ passing class standing. INC is for non-graduating students only

Source: SSCT Student Handbook

### Course Policies:

- Attendance will be checked in every class sessions to prove the students' presence in the class. This is to monitor whether absences incurred by the student is still within the allowed number of absences for a course as stipulated in the Student Handbook.
- Excuse from the class will only be honoured if a Memo from the school is issued before the absence or valid excuse letter from parents/guardians is presented after the absence. No other excuses will be entertained.
- The use of multiple choice questionnaires is used during the midterm and final examination. However, for problem solving, a detailed solution is required written legibly in a separate long size bond paper or newsprint.
- Cheating in midterm and final examination will entail a zero score. Cheating is defined to include an attempt to defraud, deceive, or mislead the instructor in arriving at honest grade assessment.
- Plagiarism in papers and other works will entail zero score. Plagiarism is a form of cheating that involves presenting as one's own work the ideas or work of another.
- Students who fail to take the midterm and final examination as scheduled shall be required to write an explanation letter address to the Program Chair, noted by the parents/guardian, and approved by the Dean. After that, he/she can take the missed examination.
- Clearance is required when the student take the final examination based on No Clearance No Examination Policy.
- Project shall be submitted on the set deadline by the instructor. Unsatisfactory project will not be accepted. However, the student will be given a chance to improve their project. Non-submission of the project on the set deadline means a zero score.

### Revision History:

Revision No.	Date of Revision	Date of Implementation	Highlight of Revision
1	August 2019	1 <sup>st</sup> Sem, AY 2019-2020	Followed school OBTL Format as per CMO #101 S. 2017
2	December 5, 2020	1 <sup>st</sup> Sem, AY 2020-2021	Followed suggestion from ChED COPC.



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**Preparation, Review, and Approval:**

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Prepared by:

**ENGR. ANDY BONG F. NAVARRO**

Guest Lecturer

Date: Aug 11, 2020

Checked and Reviewed by:

**ENGR. VICENTE Z. DELANTE, MEng'g**

Program Chair, BSEE

Date: Aug 11, 2020

Noted:

**ENGR. ROBERT R. BACARRO, MECE, MBA**

Dean, CEIT

Date: Aug 12, 2020

Recommending Approval:

**DR. RONITA E. TALINGTING**

Campus Director

Date: Aug 13, 2020

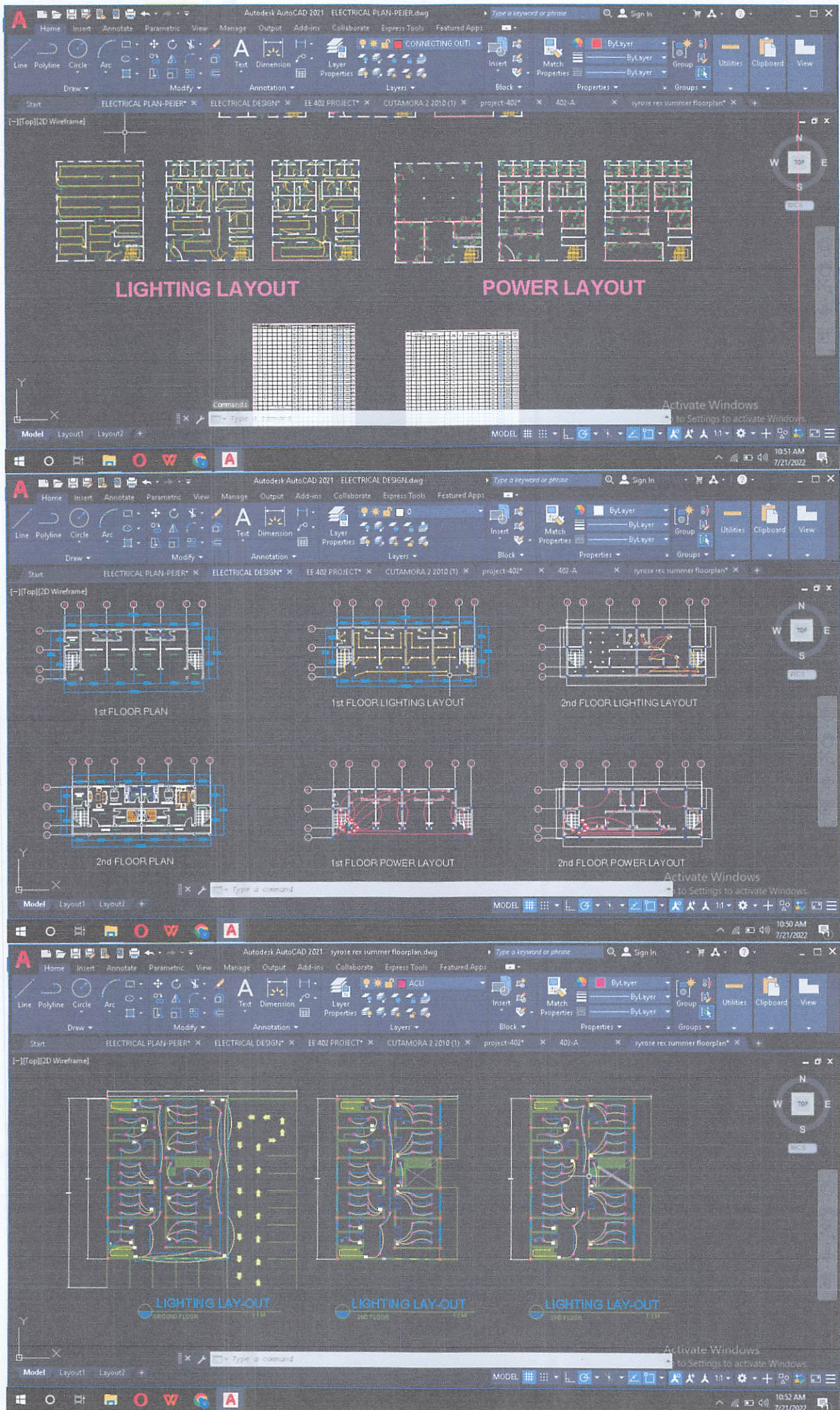
Approved by:

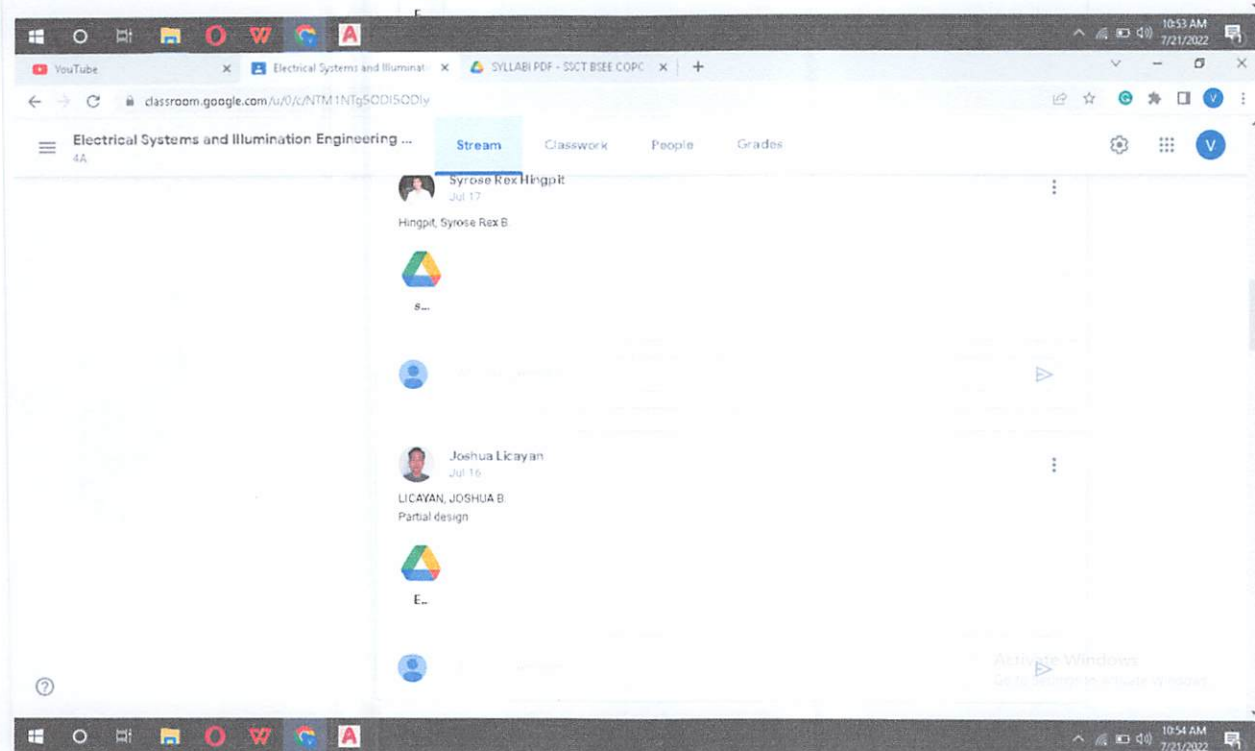
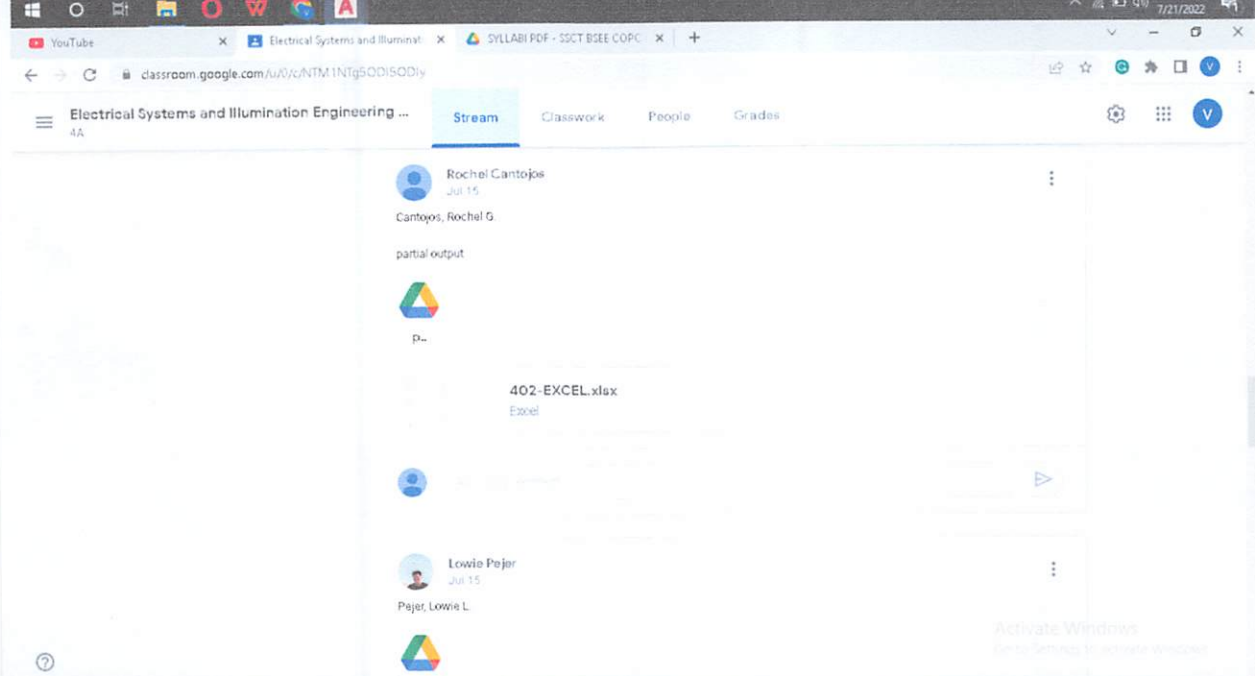
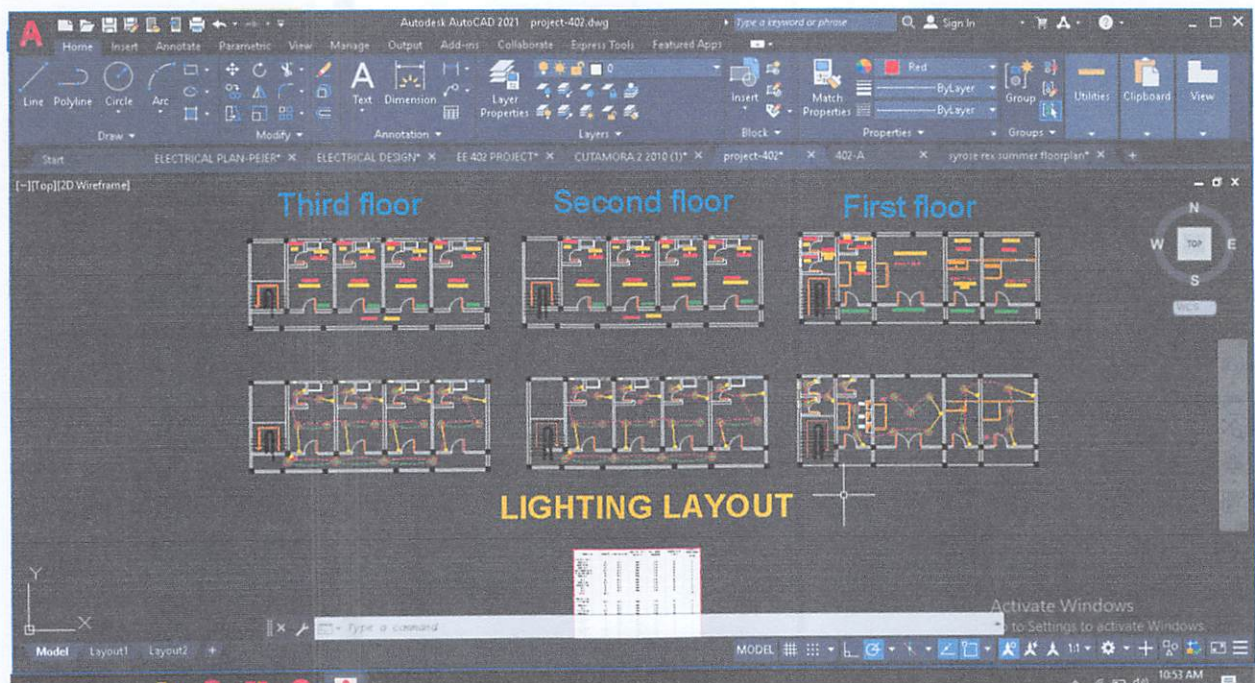
**DR. EMMYLOU A. BORJA**

VP for Academic Affairs

Date: Aug 13, 2020

# Electrical Design in EE 402-Electrical System and Illumination Engineering Design





classroom.google.com/u/0/c/NTM1NTg5ODI5ODIy/a/NTM1ODAzMjI4MzI/submissions/by-status/and-sort-name/done

Electrical Systems and Illumination Engineering Design 4A

100 points

Post-Test (Lighting Systems and Luminaires)

9 Turned in 0 Assigned

Student	Score	Status	Submission Name
Ma Buena Gracia Balberia	100	Turned in	20220714_165428.jpg
Jonard Becero	100	Turned in	post test 3.jpg
Jemaelyn Rose Besas	100	Turned in late	received_5860004462...
Rochel Cantoyos	100	Turned in	IMG20220702101619...
Jeorgie Cutamora	100	Turned in	
		Turned in	
		Turned in	
		Turned in late	
		Turned in	
		Turned in	
		Turned in	
		Turned in	

classroom.google.com/u/0/c/NTM1NTg5ODI5ODIy/a/NTM1ODAzMjI4MzI/submissions/by-status/and-sort-last-name/done

Electrical Systems and Illumination Engineering Design 4A

100 points

Post-Test (Basic Illumination)

Student	Score	Status	Submission Name
Ma Buena Gracia Balberia	100	Turned in	20220714_161850.jpg
Jonard Becero	100	Turned in	post test 1.pdf
Jemaelyn Rose Besas	100	Turned in late	received_5636460129...
Rochel Cantoyos	100	Turned in	IMG20220701092930...
Jeorgie Cutamora	100	Turned in	20220708_108103.jpg
Emelle Galeon	100	Turned in	Document 2_1.jpg
Syrose Rex Hingpit	100	Turned in	IMG_20220709_00365...
Joshua Licayan	100	Turned in	IMG20220711204519...
Lowie Pejer			