



Lesson Plan No. 01	Course Name: Digital Electronics	Course No.: ECE-302
Objectives	At the end of the lesson the student shall be able to: <ul style="list-style-type: none"> a. Understand various number systems to be used in digital circuit design b. Solve boolean expressions using minimization techniques c. Analyze and design combinational and sequential circuits d. Formulate problems and simplify with state minimizing techniques e. Analyze and compare various logic families 	
Topics Covered	Definition of Data and number systems Learning Objectives: At the end of this lecture the student shall be able to understand the basics of the Data and number systems	
Teaching Aids (if any)	<ul style="list-style-type: none"> a. PPT presentation b. Chalk and Talk c. Use of Google meet if online 	
Teaching Development	<ol style="list-style-type: none"> 1. Introduction (5 minutes) <ul style="list-style-type: none"> - Ask questions How do we use electricity to make decisions? What is difference between Analog and Digital signals Do the students know of any other number systems? How does a computer use number systems to understand commands Introduction to Digital systems(30 minutes) <ul style="list-style-type: none"> a) Discussed the real examples where digital systems are applied(5 minutes) b) Introduction of binary numbers: What are binary numbers? Why do we use them? (Electric circuits) c) Remind students how to write decimal numbers in expanded form and discuss place value. Ask them if they know what base system we use? d) Binary numbers are base 2 systems: What would the place values be for a system that is base 2? e) How many different combinations are in 2 bits? 3 bits? 8 bits? Convert from Binary to Decimal using place values f) Convert from Decimal to Binary using place values g) Students will spend time practicing converting between binary and decimal and back again h) Discussion on Octal and Hexadecimal number systems. 	
Activity (10 minutes)	Students will spend time in groups developing an algorithm that can be used to convert between any base system and our decimal number system Quick Quiz: Binary/octal /Hexadecimal to Decimal conversions	
Closure	5 minutes <ol style="list-style-type: none"> 1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading : Modern Digital Electronics by R.P.Jain , McGraw-Hill 4th (2010), Pg. No 28-31 3. NPTEL lecture: https://nptel.ac.in/courses/108/105/108105132/ refer lecture 1. 	



	<p>4. Practice – it number conversions - http://practiceit.cs.washington.edu/ Levitin A and Levitin M. Algorithmic Puzzles, Oxford University Press, Inc, 2011</p>
Evaluation	<p>1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>2. Link for the quiz using Google form https://docs.google.com/forms/d/1OIq2xZm1-QK8Gj_E4gTdMA_cDHeULGtTQboLVs92vvU/edit</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No. 02	Course Name: Digital Electronics	Course No.: ECE-302
Objectives	At the end of the lesson the student shall be able to: <ol style="list-style-type: none"> Understand various number systems to be used in digital circuit design Solve Boolean expressions using minimization techniques Analyze and design combinational and sequential circuits Formulate problems and simplify with state minimizing techniques Analyze and compare various logic families 	
Topics Covered	Definition of Binary, Octal and Hexadecimal representation Subtraction of signed/unsigned number and their conversions Learning Objectives: At the end of this lecture the student shall be able to understand the basics of the Number systems	
Teaching Aids (if any)	<ol style="list-style-type: none"> PPT presentation Chalk and Talk Use of Google meet if online 	
Teaching Development	<ol style="list-style-type: none"> Introduction (5 minutes) <ul style="list-style-type: none"> Ask questions <ul style="list-style-type: none"> How do we use electricity to make decisions? What is difference between Analog and Digital signals Do the students know of any other number systems? How does a computer use number systems to understand commands Introduction to Digital systems(30 minutes) <ol style="list-style-type: none"> Discussed the real examples where digital systems are applied(5 minutes) Introduction of binary numbers: What are binary numbers? Why do we use them? (Electric circuits) Remind students how to write decimal numbers in expanded form and discuss place value. Ask them if they know what base system we use? Binary numbers are base 2 systems: What would the place values be for a system that is base 2? How many different combinations are in 2 bits? 3 bits? 8 bits? Convert from Binary to Decimal using place values Convert from Decimal to Binary using place values Students will spend time practicing converting between binary and decimal and back again Discussion on Octal and Hexadecimal number systems. 	
Activity (10 minutes)	Students will spend time in groups developing an algorithm that can be used to convert between any base system and our decimal number system Quick Quiz: Binary/octal /Hexadecimal to Decimal conversions	
Closure	5 minutes <ol style="list-style-type: none"> Summarize the Lesson Learning Outcomes and get affirmation from students on these. Suggested Reading : Modern Digital Electronics by R.P.Jain , McGraw-Hill 4th (2010), Pg. No 28-31 NPTTEL lecture: https://nptel.ac.in/courses/108/105/108105132/ 	



	<p>refer lecture 1.</p> <p>4. Practice – it number conversions - http://practiceit.cs.washington.edu/ Levitin A and Levitin M. Algorithmic Puzzles, Oxford University Press, Inc, 2011</p>
Evaluation	<p>1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>2. Link for the quiz using Google form https://docs.google.com/forms/d/1OIq2xZm1-QK8Gj_E4gTdMA_cDHeULGtTQboLVs92vvU/edit</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No. 03	Course Name: Digital Electronics	Course No.: ECE-302
Objectives	At the end of the lesson the student shall be able to: <ol style="list-style-type: none"> Understand various number systems to be used in digital circuit design Solve Boolean expressions using minimization techniques Analyze and design combinational and sequential circuits Formulate problems and simplify with state minimizing techniques Analyze and compare various logic families 	
Topics Covered	Definition of BCD, ASCII, EBDIC, Gray codes, Excess-3 and their conversions; Learning Objectives: At the end of this lecture the student shall be able to understand the basics of the Number systems	
Teaching Aids (if any)	<ol style="list-style-type: none"> PPT presentation Chalk and Talk Use of Google meet if online 	
Teaching Development	<ol style="list-style-type: none"> Introduction (5 minutes) <ul style="list-style-type: none"> - Ask questions How do we use electricity to make decisions? What is difference between Analog and Digital signals Do the students know of any other number systems? How does a computer use number systems to understand commands Introduction to Digital systems(30 minutes) <ol style="list-style-type: none"> Discussed the real examples where digital systems are applied(5 minutes) Introduction of binary numbers: What are binary numbers? Why do we use them? (Electric circuits) Remind students how to write decimal numbers in expanded form and discuss place value. Ask them if they know what base system we use? Binary numbers are base 2 systems: What would the place values be for a system that is base 2? How many different combinations are in 2 bits? 3 bits? 8 bits? Convert from Binary to Decimal using place values Convert from Decimal to Binary using place values Students will spend time practicing converting between binary and decimal and back again Discussion on Octal and Hexadecimal number systems. 	
Activity (10 minutes)	Students will spend time in groups developing an algorithm that can be used to convert between any base system and our decimal number system Quick Quiz: Binary/octal /Hexadecimal to Decimal conversions	
Closure	5 minutes <ol style="list-style-type: none"> Summarize the Lesson Learning Outcomes and get affirmation from students on these. Suggested Reading: Modern Digital Electronics by R.P.Jain , McGraw-Hill 4th (2010), Pg. No 28-31 NPTTEL lecture: https://nptel.ac.in/courses/108/105/108105132/ 	



	<p>refer lecture 1.</p> <p>4. Practice – it number conversions - http://practiceit.cs.washington.edu/ Levitin A and Levitin M. Algorithmic Puzzles, Oxford University Press, Inc, 2011</p>
Evaluation	<p>1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>2. Link for the quiz using Google form https://docs.google.com/forms/d/1OIq2xZm1-QK8Gj_E4gTdMA_cDHeULGtTQboLVs92vvU/edit</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No. 04	Course Name: Digital Electronics	Course No.: ECE-302
Objectives	At the end of the lesson the student shall be able to: <ol style="list-style-type: none"> Understand various number systems to be used in digital circuit design Solve Boolean expressions using minimization techniques Analyze and design combinational and sequential circuits Formulate problems and simplify with state minimizing techniques Analyze and compare various logic families 	
Topics Covered	Definition of Arithmetic with base other than ten Learning Objectives: At the end of this lecture the student shall be able to understand the basics of the Number systems	
Teaching Aids (if any)	<ol style="list-style-type: none"> PPT presentation Chalk and Talk Use of Google meet if online 	
Teaching Development	<ol style="list-style-type: none"> Introduction (5 minutes) <ul style="list-style-type: none"> Ask questions <ul style="list-style-type: none"> How do we use electricity to make decisions? What is difference between Analog and Digital signals Do the students know of any other number systems? How does a computer use number systems to understand commands Introduction to Digital systems(30 minutes) <ol style="list-style-type: none"> Discussed the real examples where digital systems are applied(5 minutes) Introduction of binary numbers: What are binary numbers? Why do we use them? (Electric circuits) Remind students how to write decimal numbers in expanded form and discuss place value. Ask them if they know what base system we use? Binary numbers are base 2 systems: What would the place values be for a system that is base 2? How many different combinations are in 2 bits? 3 bits? 8 bits? Convert from Binary to Decimal using place values Convert from Decimal to Binary using place values Students will spend time practicing converting between binary and decimal and back again Discussion on Octal and Hexadecimal number systems. 	
Activity (10 minutes)	Students will spend time in groups developing an algorithm that can be used to convert between any base system and our decimal number system Quick Quiz: Binary/octal /Hexadecimal to Decimal conversions	
Closure	5 minutes <ol style="list-style-type: none"> Summarize the Lesson Learning Outcomes and get affirmation from students on these. Suggested Reading: Modern Digital Electronics by R.P.Jain , McGraw-Hill 4th (2010), Pg. No 28-31 NPTEL lecture: https://nptel.ac.in/courses/108/105/108105132/ refer lecture 1. 	



	<p>4. Practice – it number conversions - http://practiceit.cs.washington.edu/ Levitin A and Levitin M. Algorithmic Puzzles, Oxford University Press, Inc, 2011</p>
Evaluation	<p>1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>2. Link for the quiz using Google form https://docs.google.com/forms/d/1OIq2xZm1-QK8Gj_E4gTdMA_cDHeULGtTQboLVs92vvU/edit</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No. 05	Course Name: Digital Electronics	Course No.: ECE-302
Objectives	At the end of the lesson the student shall be able to: <ol style="list-style-type: none"> Understand various number systems to be used in digital circuit design Solve Boolean expressions using minimization techniques Analyze and design combinational and sequential circuits Formulate problems and simplify with state minimizing techniques Analyze and compare various logic families 	
Topics Covered	Definition of Signed and unsigned binary number representation with 1's and 2's complement methods, Binary arithmetic Learning Objectives: At the end of this lecture the student shall be able to understand the basics of the Number systems	
Teaching Aids (if any)	<ol style="list-style-type: none"> PPT presentation Chalk and Talk Use of Google meet if online 	
Teaching Development	<ol style="list-style-type: none"> Introduction (5 minutes) <ul style="list-style-type: none"> - Ask questions How do we use electricity to make decisions? What is difference between Analog and Digital signals Do the students know of any other number systems? How does a computer use number systems to understand commands Introduction to Digital systems(30 minutes) <ol style="list-style-type: none"> Discussed the real examples where digital systems are applied(5 minutes) Introduction of binary numbers: What are binary numbers? Why do we use them? (Electric circuits) Remind students how to write decimal numbers in expanded form and discuss place value. Ask them if they know what base system we use? Binary numbers are base 2 systems: What would the place values be for a system that is base 2? How many different combinations are in 2 bits? 3 bits? 8 bits? Convert from Binary to Decimal using place values Convert from Decimal to Binary using place values Students will spend time practicing converting between binary and decimal and back again Discussion on Octal and Hexadecimal number systems. 	
Activity (10 minutes)	Students will spend time in groups developing an algorithm that can be used to convert between any base system and our decimal number system Quick Quiz: Binary/octal /Hexadecimal to Decimal conversions	
Closure	5 minutes <ol style="list-style-type: none"> Summarize the Lesson Learning Outcomes and get affirmation from students on these. Suggested Reading: Modern Digital Electronics by R.P.Jain , McGraw-Hill 4th (2010), Pg. No 28-31 NPTTEL lecture: https://nptel.ac.in/courses/108/105/108105132/ 	



	<p>refer lecture 1.</p> <p>4. Practice – it number conversions - http://practiceit.cs.washington.edu/ Levitin A and Levitin M. Algorithmic Puzzles, Oxford University Press, Inc, 2011</p>
Evaluation	<p>1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>2. Link for the quiz using Google form https://docs.google.com/forms/d/1OIq2xZm1-QK8Gj_E4gTdMA_cDHeULGtTQboLVs92vvU/edit</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No. 06	Course Name: Digital Electronics	Course No.: ECE-302
Objectives	At the end of the lesson the student shall be able to: <ul style="list-style-type: none"> a. Understand various number systems to be used in digital circuit design b. Solve Boolean expressions using minimization techniques c. Analyze and design combinational and sequential circuits d. Formulate problems and simplify with state minimizing techniques e. Analyze and compare various logic families 	
Topics Covered	Definition of An overview of Boolean algebra Learning Objectives: At the end of this lecture the student shall be able to understand the basics of the Boolean Algebra	
Teaching Aids (if any)	<ul style="list-style-type: none"> a. PPT presentation b. Chalk and Talk c. Use of Google meet if online 	
Teaching Development	<ol style="list-style-type: none"> 1. Introduction (5 minutes) <ul style="list-style-type: none"> - Ask questions <ul style="list-style-type: none"> How do we use electricity to make decisions? What is difference between Analog and Digital signals Do the students know of any other number systems? How does a computer use number systems to understand commands Introduction to Digital systems(30 minutes) <ul style="list-style-type: none"> a) Discussed the real examples where digital systems are applied(5 minutes) b) Introduction of binary numbers: What are binary numbers? Why do we use them? (Electric circuits) c) Remind students how to write decimal numbers in expanded form and discuss place value. Ask them if they know what base system we use? d) Binary numbers are base 2 systems: What would the place values be for a system that is base 2? e) How many different combinations are in 2 bits? 3 bits? 8 bits? Convert from Binary to Decimal using place values f) Convert from Decimal to Binary using place values g) Students will spend time practicing converting between binary and decimal and back again h) Discussion on Octal and Hexadecimal number systems. 	
Activity (10 minutes)	Students will spend time in groups developing an algorithm that can be used to convert between any base system and our decimal number system Quick Quiz: Binary/octal /Hexadecimal to Decimal conversions	
Closure	5 minutes <ol style="list-style-type: none"> 1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading: Modern Digital Electronics by R.P.Jain , McGraw-Hill 4th (2010), Pg. No 28-31 3. NPTEL lecture: https://nptel.ac.in/courses/108/105/108105132/ refer lecture 1. 	



	<p>4. Practice – it number conversions - http://practiceit.cs.washington.edu/ Levitin A and Levitin M. Algorithmic Puzzles, Oxford University Press, Inc, 2011</p>
Evaluation	<p>1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>2. Link for the quiz using Google form https://docs.google.com/forms/d/1OIq2xZm1-QK8Gj_E4gTdMA_cDHeULGtTQboLVs92vvU/edit</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No. 07	Course Name: Digital Electronics	Course No.: ECE-302
Objectives	At the end of the lesson the student shall be able to: <ul style="list-style-type: none"> a. Understand various number systems to be used in digital circuit design b. Solve Boolean expressions using minimization techniques c. Analyze and design combinational and sequential circuits d. Formulate problems and simplify with state minimizing techniques e. Analyze and compare various logic families 	
Topics Covered	Definition of An overview of Boolean algebra Learning Objectives: At the end of this lecture the student shall be able to understand the basics of the Boolean Algebra	
Teaching Aids (if any)	<ul style="list-style-type: none"> a. PPT presentation b. Chalk and Talk c. Use of Google meet if online 	
Teaching Development	<ol style="list-style-type: none"> 1. Introduction (5 minutes) <ul style="list-style-type: none"> - Ask questions How do we use electricity to make decisions? What is difference between Analog and Digital signals Do the students know of any other number systems? How does a computer use number systems to understand commands Introduction to Digital systems(30 minutes) <ul style="list-style-type: none"> a) Discussed the real examples where digital systems are applied(5 minutes) b) Introduction of binary numbers: What are binary numbers? Why do we use them? (Electric circuits) c) Remind students how to write decimal numbers in expanded form and discuss place value. Ask them if they know what base system we use? d) Binary numbers are base 2 systems: What would the place values be for a system that is base 2? e) How many different combinations are in 2 bits? 3 bits? 8 bits? Convert from Binary to Decimal using place values f) Convert from Decimal to Binary using place values g) Students will spend time practicing converting between binary and decimal and back again h) Discussion on Octal and Hexadecimal number systems. 	
Activity (10 minutes)	Students will spend time in groups developing an algorithm that can be used to convert between any base system and our decimal number system Quick Quiz: Binary/octal /Hexadecimal to Decimal conversions	
Closure	5 minutes <ol style="list-style-type: none"> 1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading: Modern Digital Electronics by R.P.Jain , McGraw-Hill 4th (2010), Pg. No 28-31 3. NPTEL lecture: https://nptel.ac.in/courses/108/105/108105132/ refer lecture 1. 	



	<p>4. Practice – it number conversions - http://practiceit.cs.washington.edu/ Levitin A and Levitin M. Algorithmic Puzzles, Oxford University Press, Inc, 2011</p>
Evaluation	<p>1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>2. Link for the quiz using Google form https://docs.google.com/forms/d/1OIq2xZm1-QK8Gj_E4gTdMA_cDHeULGtTQboLVs92vvU/edit</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No. 08	Course Name: Digital Electronics	Course No.: ECE-302
Objectives	At the end of the lesson the student shall be able to: <ul style="list-style-type: none"> a. Understand various number systems to be used in digital circuit design b. Solve Boolean expressions using minimization techniques c. Analyze and design combinational and sequential circuits d. Formulate problems and simplify with state minimizing techniques e. Analyze and compare various logic families 	
Topics Covered	Definition of Simplification of logic variable using K-map method Learning Objectives: At the end of this lecture the student shall be able to understand the basics of the Simplification using K-Map	
Teaching Aids (if any)	<ul style="list-style-type: none"> a. PPT presentation b. Chalk and Talk c. Use of Google meet if online 	
Teaching Development	<ol style="list-style-type: none"> 1. Introduction (5 minutes) <ul style="list-style-type: none"> - Ask questions <ul style="list-style-type: none"> How do we use electricity to make decisions? What is difference between Analog and Digital signals Do the students know of any other number systems? How does a computer use number systems to understand commands Introduction to Digital systems(30 minutes) <ul style="list-style-type: none"> a) Discussed the real examples where digital systems are applied(5 minutes) b) Introduction of binary numbers: What are binary numbers? Why do we use them? (Electric circuits) c) Remind students how to write decimal numbers in expanded form and discuss place value. Ask them if they know what base system we use? d) Binary numbers are base 2 systems: What would the place values be for a system that is base 2? e) How many different combinations are in 2 bits? 3 bits? 8 bits? Convert from Binary to Decimal using place values f) Convert from Decimal to Binary using place values g) Students will spend time practicing converting between binary and decimal and back again h) Discussion on Octal and Hexadecimal number systems. 	
Activity (10 minutes)	Students will spend time in groups developing an algorithm that can be used to convert between any base system and our decimal number system Quick Quiz: Binary/octal /Hexadecimal to Decimal conversions	
Closure	5 minutes <ol style="list-style-type: none"> 1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading: Modern Digital Electronics by R.P.Jain , McGraw-Hill 4th (2010), Pg. No 28-31 3. NPTEL lecture: https://nptel.ac.in/courses/108/105/108105132/ refer lecture 1. 	



	<p>4. Practice – it number conversions - http://practiceit.cs.washington.edu/ Levitin A and Levitin M. Algorithmic Puzzles, Oxford University Press, Inc, 2011</p>
Evaluation	<p>1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>2. Link for the quiz using Google form https://docs.google.com/forms/d/1OIq2xZm1-QK8Gj_E4gTdMA_cDHeULGtTQboLVs92vvU/edit</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No. 09	Course Name: Digital Electronics	Course No.: ECE-302
Objectives	At the end of the lesson the student shall be able to: <ul style="list-style-type: none"> a. Understand various number systems to be used in digital circuit design b. Solve Boolean expressions using minimization techniques c. Analyze and design combinational and sequential circuits d. Formulate problems and simplify with state minimizing techniques e. Analyze and compare various logic families 	
Topics Covered	Definition of Simplification of logic variable using K-map method Learning Objectives: At the end of this lecture the student shall be able to understand the basics of the Simplification using K-Map	
Teaching Aids (if any)	<ul style="list-style-type: none"> a. PPT presentation b. Chalk and Talk c. Use of Google meet if online 	
Teaching Development	<ol style="list-style-type: none"> 1. Introduction (5 minutes) <ul style="list-style-type: none"> - Ask questions <ul style="list-style-type: none"> How do we use electricity to make decisions? What is difference between Analog and Digital signals Do the students know of any other number systems? How does a computer use number systems to understand commands Introduction to Digital systems(30 minutes) <ul style="list-style-type: none"> a) Discussed the real examples where digital systems are applied(5 minutes) b) Introduction of binary numbers: What are binary numbers? Why do we use them? (Electric circuits) c) Remind students how to write decimal numbers in expanded form and discuss place value. Ask them if they know what base system we use? d) Binary numbers are base 2 systems: What would the place values be for a system that is base 2? e) How many different combinations are in 2 bits? 3 bits? 8 bits? Convert from Binary to Decimal using place values f) Convert from Decimal to Binary using place values g) Students will spend time practicing converting between binary and decimal and back again h) Discussion on Octal and Hexadecimal number systems. 	
Activity (10 minutes)	Students will spend time in groups developing an algorithm that can be used to convert between any base system and our decimal number system Quick Quiz: Binary/octal /Hexadecimal to Decimal conversions	
Closure	5 minutes <ol style="list-style-type: none"> 1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading: Modern Digital Electronics by R.P.Jain , McGraw-Hill 4th (2010), Pg. No 28-31 3. NPTEL lecture: https://nptel.ac.in/courses/108/105/108105132/ refer lecture 1. 	



	<p>4. Practice – it number conversions - http://practiceit.cs.washington.edu/ Levitin A and Levitin M. Algorithmic Puzzles, Oxford University Press, Inc, 2011</p>
Evaluation	<p>1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>2. Link for the quiz using Google form https://docs.google.com/forms/d/1OIq2xZm1-QK8Gj_E4gTdMA_cDHeULGtTQboLVs92vvU/edit</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No. 10	Course Name: Digital Electronics	Course No.: ECE-302
Objectives	At the end of the lesson the student shall be able to: <ol style="list-style-type: none"> Understand various number systems to be used in digital circuit design Solve Boolean expressions using minimization techniques Analyze and design combinational and sequential circuits Formulate problems and simplify with state minimizing techniques Analyze and compare various logic families 	
Topics Covered	Definition of Simplification of logic variable using K-map method Learning Objectives: At the end of this lecture the student shall be able to understand the basics of the Simplification using K-Map	
Teaching Aids (if any)	<ol style="list-style-type: none"> PPT presentation Chalk and Talk Use of Google meet if online 	
Teaching Development	<ol style="list-style-type: none"> Introduction (5 minutes) <ul style="list-style-type: none"> Ask questions <ul style="list-style-type: none"> How do we use electricity to make decisions? What is difference between Analog and Digital signals Do the students know of any other number systems? How does a computer use number systems to understand commands Introduction to Digital systems(30 minutes) <ol style="list-style-type: none"> Discussed the real examples where digital systems are applied(5 minutes) Introduction of binary numbers: What are binary numbers? Why do we use them? (Electric circuits) Remind students how to write decimal numbers in expanded form and discuss place value. Ask them if they know what base system we use? Binary numbers are base 2 systems: What would the place values be for a system that is base 2? How many different combinations are in 2 bits? 3 bits? 8 bits? Convert from Binary to Decimal using place values Convert from Decimal to Binary using place values Students will spend time practicing converting between binary and decimal and back again Discussion on Octal and Hexadecimal number systems. 	
Activity (10 minutes)	Students will spend time in groups developing an algorithm that can be used to convert between any base system and our decimal number system Quick Quiz: Binary/octal /Hexadecimal to Decimal conversions	
Closure	5 minutes <ol style="list-style-type: none"> Summarize the Lesson Learning Outcomes and get affirmation from students on these. Suggested Reading: Modern Digital Electronics by R.P.Jain , McGraw-Hill 4th (2010), Pg. No 28-31 NPTEL lecture: https://nptel.ac.in/courses/108/105/108105132/ refer lecture 1. 	



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Evaluation	<p>1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>2. Link for the quiz using Google form https://docs.google.com/forms/d/1OIq2xZm1-QK8Gj_E4gTdMA_cDHeULGtTQboLVs92vvU/edit</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>