



Model Institute of Engineering & Technology (Autonomous)

(Permanently affiliated to the University of Jammu, Accredited by NAAC with "A" grade)

Lesson Plan No. 1	Course Name: Green Building Infrastructure and Architecture	CourseNo.:CE-604
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Objectives	At the end of the lesson the student shall be able to: <ol style="list-style-type: none">Study the concept of green buildingsHow to make your building greenFundamental principles of green buildingsVarious building laws made by Indian council
Teaching Aids (if any)	<ol style="list-style-type: none">Video on green building
Teaching Development	<ol style="list-style-type: none">Introduction(5minutes)<ul style="list-style-type: none">Ask questionsWhat do you mean by green building?What do you understand by green building Infrastructure?What do you mean green building features?Highlight the importance of green building.Development(30minutes)<ul style="list-style-type: none">Introduce the concept of green building and Architecture.Objectives of green buildingGraphical representation of green buildingDiscuss principle and various laws and feature of green buildingExplain its importanceExercise(5minutes)– Give students time to discuss about various types of green building.
Closure	<ol style="list-style-type: none">Summarize the Lesson Learning Outcomes and get affirmation from students on these.Suggested material– https://www.youtube.com/watch?v=VE2tpwGCN0U.https://mohua.gov.in/upload/uploadfiles/files/MBBL.pdf.Spend 5 minutes to wrap up and consolidate the learning.
Evaluation	<ol style="list-style-type: none">Reflective Questions (What, Why, How?). Allow students to answer and discuss. <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



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Lesson Plan No. 2	Course Name: Green Building Infrastructure and Architecture	CourseNo.:CE-604
Objectives	At the end of the lesson the student shall be able to: <ol style="list-style-type: none"> e. Understand the site selection for buildings f. Understand the types of orientation of buildings g. Define common errors and planning in buildings. 	
Teaching Aids (if any)	b. Video https://sustainabilityworkshop.venturewell.org/buildings/building-orientation-bim.html .	
Teaching Development	<ol style="list-style-type: none"> 4. Introduction(5minutes) <ul style="list-style-type: none"> - Ask questions - What do you mean by site selection and orientation of buildings? 5. Development(30minutes) <ul style="list-style-type: none"> - Introduce the concept selecting the buildings - Graphically representation of orientation of buildings - Discuss about the errors in planning the building. - Represent its type in action - Explain its importance 6. Exercise(5minutes)– Give students time to discuss about Branches of Geology 	
Closure	<ol style="list-style-type: none"> 5. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 6. Suggested material: https://onlinecourses.nptel.ac.in/noc19_ce40/preview. 7. Spend 5 minutes to wrap up and consolidate the learning. 	
Evaluation	<ol style="list-style-type: none"> 1. Reflective Questions (What, Why, How?). Allow students to answer and discuss. <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>	



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Lesson Plan No. 3	Course Name: Green Building Infrastructure and Architecture	CourseNo.:CE-604
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Objectives	At the end of the lesson the student shall be able to: <ul style="list-style-type: none"> h. To study the rain water harvesting. i. To understand the various provision of rain water harvesting.
Teaching Aids(if any)	c. Video and OHP
Teaching Development	<p>7. Introduction(5minutes)</p> <ul style="list-style-type: none"> - Ask questions - What do you mean by rain water harvesting? - What do you understand by Reuse and recycle of water? - Advantages of about the rain water harvesting. - Provision of rain water harvesting. <p>8. Development(30 minutes)</p> <p>Interior part of the Earth</p> <ul style="list-style-type: none"> - Introduce the concept rain water harvesting. - Components of water harvesting. - Represent the various examples. - Discuss about its significance. - Explain its importance. <p>9. Exercise(5 minutes)– Give students time to discuss about Branches of Geology</p>
Closure	<p>8. Summarize the Lesson Learning Outcomes and get affirmation from students on these.</p> <p>9. Suggested material –</p> <p>https://refreshscience.com/what-is-rainwater-harvesting/.</p> <p>10. Spend 5 minutes to wrap-up and consolidate the learning</p>
Evaluation	<p>1. Reflective Questions (What, Why, How?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



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Lesson Plan No. 4	Course Name: Green Building Infrastructure and Architecture	CourseNo.:CE-604
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Objectives	At the end of the lesson the student shall be able to: j. To study the Green Building Materials and Equipment used in India k. To understand the important Sustainable features for Green Building.
Teaching Aids(if any)	d. Video and OHP
Teaching Development	<p>10. Introduction(5 minutes)</p> <ul style="list-style-type: none"> - Ask questions - Discuss about the various sources of material. <p>Highlight the importance of Sustainable green building.</p> <p>11. Development(30minutes)</p> <ul style="list-style-type: none"> - Introduce the concept of green building material. - Feature presentation layout of green building - Represent the various example - Discuss about its significance - Explain its importance <p>12. Exercise(5minutes)– Give students time to discuss about Branches of Geology</p>
Closure	<p>11. Summarize the Lesson Learning Outcomes and get affirmation from students on these.</p> <p>12. Suggested material – https://onlinecourses.nptel.ac.in/noc19_ce40/preview.</p> <p>13. Spend 5 minutes to wrap up and consolidate the learning.</p>
Evaluation	<p>1. Reflective Questions (What, Why, How?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



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Lesson Plan No. 5	Course Name: Green Building Infrastructure and Architecture	CourseNo.:CE-604
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Objectives	At the end of the lesson the student shall be able to: <ol style="list-style-type: none"> l. To study the Principles of Planning Green building m. To understand the various Indian green building council developed
Teaching Aids(if any)	e. Video and OHP
Teaching Development	<p>13. Introduction(5minutes)</p> <ul style="list-style-type: none"> - Ask questions - What do you understand by planning of green building? - Discuss about the Indian statistics of India. - Discuss about the green building Council developed by Indian government. <p>14. Development(30minutes)</p> <ul style="list-style-type: none"> - Introduce the concept planning in green building and Initiates taken by IBGC - Feature presentation - Represent the various example - Discuss about its significance - Explain its importance <p>15. Exercise(5minutes)– Give students time to discuss about Branches of Geology</p>
Closure	<p>14. Summarize the Lesson Learning Outcomes and get affirmation from students on these.</p> <p>15. Suggested material –</p> <p>https://www.re-thinkingthefuture.com/sustainable-architecture/a8292-an-overview-of-the-indian-green-building-council-igbc/.</p> <p>16. Spend 5 minutes to wrap up and consolidate the learning.</p>
Evaluation	<p>1. Reflective Questions (What, Why, How?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



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Lesson Plan No. 6	Course Name: Green Building Infrastructure and Architecture	CourseNo.:CE-604
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Objectives	At the end of the lesson the student shall be able to: n. Define and describe the benefits Experienced in Green Buildings. o. Define and launch of IGBC rating system p. Describe the importance of green building in residential sector.
Teaching Aids(if any)	f. Video g. OHP
Teaching Development	<p>16. Introduction(5minutes)</p> <ul style="list-style-type: none"> - Ask questions - What do you understand by planning of green building? - What do you understand by green building council. - Discuss about rating system given by IGBC - Highlight the importance of IGBC. <p>17. Development(30minutes)</p> <ul style="list-style-type: none"> - Introduce the concept principle of green building - various initiatives taken by IGBC - Chart representation of IGBC - Importance of Residential Sector in IGBC - Explain its importance. <p>18. Exercise(5minutes)– Give students time to discuss about Geological Time Scale.</p>
Closure	<p>17. Summarize the Lesson Learning Outcomes and get affirmation from students on these.</p> <p>18. Suggested material</p> <p>https://igbc.in/igbc/redirectHtml.htm?redVal=showratingSysnosign.</p> <p>19. Spend 5 minutes to wrap up and consolidate the learning</p>
Evaluation	<p>1. Reflective Questions (What, Why, How?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



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Lesson Plan No. 7	Course Name: Green Building Infrastructure and Architecture	CourseNo.:CE-604
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Objectives	At the end of the lesson the student shall be able to: q. To Study the Market Transformation Principles of green building r. To study the usage of low energy materials. s. To study the tangible benefits by energy saving
Teaching Aids(if any)	h. Video i. OHP
Teaching Development	<p>19. Introduction(5minutes)</p> <ul style="list-style-type: none"> - Ask questions - What do you mean by market transformation? - What do you understand by low usage of energy in green buildings? - What do you mean renewable energy? - Discuss about the zero energy houses. <p>20. Development(30minutes) Interior part of the Earth</p> <ul style="list-style-type: none"> - Introduce the concept market transformation in market by IGBC - Principle of low usage energy in green buildings. - Discuss - Explain its importance <p>21. Exercise(5minutes)– Give students time to discuss about energy saving principle.</p>
Closure	<p>20. Summarize the Lesson Learning Outcomes and get affirmation from students on these.</p> <p>21. Suggested material – https://aceupdate.com/industry-analysis/10-energy-efficient-building-materials/.</p> <p>22. Spend 5 minutes to wrap up and consolidate the learning.</p>
Evaluation	<p>1. Reflective Questions (What, Why, How?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents.</p>



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Lesson Plan No. 8	Course Name: Green Building Infrastructure and Architecture	CourseNo.:CE-604
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Objectives	At the end of the lesson the student shall be able to: <ul style="list-style-type: none"> t. Define about the effective cooling and heating systems in green building u. Describe the energy efficiency in building. v. Describe effective electrical systems in building w. Discuss Natural building design consideration.
Teaching Aids(if any)	j. Video and OHP
Teaching Development	<p>22. Introduction(5minutes)</p> <ul style="list-style-type: none"> - Ask questions - What do you mean heating and cooling system? - What do you understand by energy efficiency in building - What do you mean application of electrical system in building - Discuss about the importance heating and cooling system in green building <p>23. Development(30minutes)</p> <ul style="list-style-type: none"> - Introduce the effective heating and cooling system - Graphical representation of heating system in building - Discuss the environmental consideration in building design. - Explain its importance <p>24. Exercise(5minutes)–</p> <ul style="list-style-type: none"> - Give students time to discuss about environmental factors consider in building.
Closure	<p>23. Summarize the Lesson Learning Outcomes and get affirmation from students on these.</p> <p>24. Suggested material-</p> <p>https://www.kmbdg.com/news/energyengineering-company-sustainable-building-design/.</p> <p>25. Spend 5 minutes to wrap up and consolidate the learning.</p>
Evaluation	<p>1. Reflective Questions (What, Why, How?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



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Lesson Plan No. 9	Course Name: Green Building Infrastructure and Architecture	Course No.: CE-604
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Objectives	At the end of the lesson the student shall be able to: a. To study the concept of Energy management. b. To study the effect of Energy in building design. c. To study the Energy efficient in green building and environment friendly building.
Teaching Aids (if any)	a. Video b. OHP
Teaching Development	<ol style="list-style-type: none">1. Introduction (5 minutes)<ul style="list-style-type: none">- Ask questions- What do you mean by energy efficiency in green building?- What do you understand energy in green building?- What do you understand by environment friendly building.2. Development (30 minutes)<ul style="list-style-type: none">- Introduce the concept energy efficiency.- Representation of energy efficiency works in building.- Importance of environment friendly building.3. Exercise (5 minutes) – Give students time to discuss about the various factors related to energy efficient buildings.
Closure	<ol style="list-style-type: none">1. Summarize the Lesson Learning Outcomes and get affirmation from students on these.2. Suggested material– https://biofilico.com/news/green-building-energy-efficiency. https://www.greenbuildermedia.com/blog/importance-of-green-building.3. Spend 5 minutes to wrap up and consolidate the learning.
Evaluation	<ol style="list-style-type: none">1. Reflective Questions (What, Why, How?). Allow students to answer and discuss. <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



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Lesson Plan No. 10	Course Name: Green Building Infrastructure and Architecture	Course No.: CE- 604
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Objectives	At the end of the lesson the student shall be able to: <ul style="list-style-type: none"> a. To study the Thermal phenomena in the building b. To study the thermal comfort phenomena and Indoor Air quality c. To study the passive heating and cooling systems in the building.
Teaching Aids (if any)	<ul style="list-style-type: none"> a. Video b. OHP
Teaching Development	<ol style="list-style-type: none"> 1. Introduction (5 minutes) <ul style="list-style-type: none"> - Ask questions d. What do you mean by Thermal phenomena in the building? <ul style="list-style-type: none"> - What do you understand by thermal comfort? - What do you understand by Indoor Air quality - Discuss about passive heating and cooling systems in the building. 2. Development (30 minutes) <ul style="list-style-type: none"> - Introduce the concept of Thermal phenomena and thermal comfort in the green building. - Discuss about why Indoor Air quality is important. - Discuss about passive heating and cooling systems in the building - Explain its importance. 3. Exercise (5 minutes) –Discuss about how to improve air quality in green buildings.
Closure	<ol style="list-style-type: none"> 1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested material - <ul style="list-style-type: none"> https://www.buildingsiot.com/blog/how-to-improve-thermal-comfort-and-indoor-air-quality-in-any-building-bd. https://archi-monarch.com/passive-heating-and-cooling-techniques/. 3. Spend 5 minutes to wrap up and consolidate the learning.
Evaluation	<ol style="list-style-type: none"> 1. Reflective Questions (What, Why, How?). Allow students to answer and discuss. <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



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Lesson Plan No. 11	Course Name: Green Building Infrastructure and Architecture	Course No.: CE-604
Objective	At the end of the lesson the student shall be able to: <ol style="list-style-type: none"> 1. To study the Active heating, ventilation and air conditioning (HVAC) systems in the buildings 2. To study the energy source in HVAC 	
Teaching Aids (if any)	Chalk Board and PPT.	
Teaching Development	<ol style="list-style-type: none"> 1. Introduction (5 minutes) <ul style="list-style-type: none"> • Ask questions Do you Know any how HVAC works? Discuss about its working? 2. Development (30 minutes) <ol style="list-style-type: none"> a. Introduction to the cooling system in HVAC b. Discuss about energy efficient HVAC c. Graphical representation of HVAC in building <p style="text-align: center;">Exercise (5 minutes) – Give students to discuss about different types of heating devices in building.</p>	
Closure	<ol style="list-style-type: none"> 1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://www.techtarget.com/searchdatacenter/definition/HVAC. 	
Evaluation	<ol style="list-style-type: none"> 1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>	



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Lesson Plan No. 12	Course Name: Green Building Infrastructure and Architecture	Course No.: CE-604
Objective	At the end of the lesson the student shall be able to explain: <ol style="list-style-type: none">1. To know about energy audit of building2. To understand the procedure of energy audit	
Teaching Aids (if any)	Chalk Board and PPT.	
Teaching Development	<ol style="list-style-type: none">1. Introduction (5 minutes)<ul style="list-style-type: none">• Ask questions What do you mean by energy audit? What is scope of energy audit?2. Development (30 minutes)<ol style="list-style-type: none">a. Introduction to energy audit in buildings<ol style="list-style-type: none">1. Discuss about energy audit team.2. Discuss about Required testing instrument in audit.3. Discussed the various inspection terms related to audit <p>Exercise (5 minutes) – To students to think about various types of site inspection in audit.</p>	
Closure	<ol style="list-style-type: none">1. Summarize the Lesson Learning Outcomes and get affirmation from students on these.2. Suggested Reading https://jumpintostem.org/challenge/buildingenergyaudits/. Spend 5 minutes to wrap up and consolidate the learning.	
Evaluation	<ol style="list-style-type: none">1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents	



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Lesson Plan No. 13	Course Name: Green Building Infrastructure and Architecture	Course No.: CE-604
Objective	At the end of the lesson the student shall be able explain to: 3. Various types of audits in building 4. Classification of audits	
Teaching Aids (if any)	Chalk Board and PPT.	
Teaching Development	<p>a. Introduction (5 minutes)</p> <p>b. Ask questions</p> <ol style="list-style-type: none">1. Do you have any idea about various types of audits in buildings?2. To know about internal and external audit <p>Development (30 minutes)</p> <ol style="list-style-type: none">1. Kinds of audit system.2. Audits of small entities3. Give brief idea about final and periodic audit. <p>Exercise (5 minutes) – Advantages and disadvantages of audits.</p>	
Closure	<ol style="list-style-type: none">3. Summarize the Lesson Learning Outcomes and get affirmation from students on these.4. Suggested Reading- https://www.patriotsoftware.com/blog/accounting/different-types-of-audit/.	
Evaluation	<ol style="list-style-type: none">2. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>	



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Lesson Plan No. 14	Course Name: Green Building Infrastructure and Architecture	Course No.: CE-604
Objective	At the end of the lesson the student shall be able explain to: <ol style="list-style-type: none"> 5. Energy flow diagram 6. Consumption of energy in buildings. 	
Teaching Aids (if any)	Chalk Board and PPT.	
Teaching Development	<ol style="list-style-type: none"> 3. Introduction (5 minutes) <ul style="list-style-type: none"> • Ask questions <ol style="list-style-type: none"> 1. Do you know about energy flow? 2. Have you heard about term heat transfer? 3. How is energy consumed in a building? 4. Development (30 minutes) <ol style="list-style-type: none"> 1. Discussed about energy flow system 2. Graphical representation of energy flow in buildings. 3. discussed about energy consumption or conservation. <p style="text-align: center;">Exercise (5 minutes) –</p> <p>Problem: What are the various factors for effective use of energy consumption?</p>	
Closure	<ol style="list-style-type: none"> 5. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 6. Suggested Reading- https://www.ifu.com/e-sankey/energy-flow-diagram/. <p style="text-align: center;">Spend 5 minutes to wrap up and consolidate the learning.</p>	
Evaluation	<ol style="list-style-type: none"> 3. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. <p style="text-align: center;">Spend 5 minutes to evaluate student assimilation of the lesson contents</p>	



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Lesson Plan No. 15	Course Name: Green Building Infrastructure and Architecture	Course No.: CE-604
Objective	At the end of the lesson the student shall be able to: 7. Identification of wastage 8. Different forms of wastage	
Teaching Aids (if any)	Chalk Board and PPT.	
Teaching Development	5. Introduction (5 minutes) <ul style="list-style-type: none">• Ask questions 1. Discuss about identification of wastage in buildings. 2. How do we effectively minimize the wastage? 3. Design to prevent wastage 6. Development (30 minutes) <ul style="list-style-type: none">c. Various examples related to identification of wastage.d. Discussed about the different forms of wastage occur during construction of buildings.e. Examples of causes. Exercise- What is the best practise approach to waste reduction.	
Closure	7. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 8. Suggested Reading- https://leanconstruction.org/lean-topics/8-wastes-of-lean/ .	
Evaluation	4. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents	



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Lesson Plan No. 16	Course Name: Green Building Infrastructure and Architecture	Course No.: CE-604
Objective	At the end of the lesson the student shall be able to: <ul style="list-style-type: none">○ To identify the Priority of conservative measures○ Annual energy consumption	
Teaching Aids (if any)	Chalk Board and PPT.	
Teaching Development	<p>7. Introduction (5 minutes)</p> <ul style="list-style-type: none">• Ask questions<ul style="list-style-type: none">○ Do you know what the conservative measures in energy are?<ul style="list-style-type: none">• What are the requirements of heating in buildings?• Energy surveys. <p>8. Development (30 minutes)</p> <ol style="list-style-type: none">a. Introduction to term Priority of conservative measures.b. Discussed various method of energy conservative in buildings. <p>Problem: Identify order Accuracy of above method?</p>	
Closure	<p>9. Summarize the Lesson Learning Outcomes and get affirmation from students on these.</p> <p>10. Suggested Reading</p> <p>https://www2.luther.edu/sustainability/energy-climate/conservation/.</p>	
Evaluation	<p>5. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>	



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Lesson Plan No. 17	Course Name: Green Building Infrastructure and Architecture	Course No.: CE-604
Objective	At the end of the lesson the student shall be able to: <ul style="list-style-type: none">• To study the Maintenance of management programme• To study the areas of maintenance.	
Teaching Aids (if any)	Chalk Board and PPT.	
Teaching Development	<p>9. Introduction (5 minutes)</p> <ul style="list-style-type: none">• Ask questions<ol style="list-style-type: none">1. Do you have any idea management programme in maintenance?2. Importance of maintenance.3. Types of maintenance management4. Maintenance policies. <p>10. Development (30 minutes)</p> <ul style="list-style-type: none">• Discuss about the various Maintenance of management programme.• Discuss about quality, reliability and maintainability. <p>Exercise (5 minutes) – Why does facilities maintenance matter? - How will a maintenance plan make our environment better?</p>	
Closure	<p>11. Summarize the Lesson Learning Outcomes and get affirmation from students on these.</p> <p>12. Suggested Reading- https://www.youtube.com/watch?v=Cdy1swHJVP4.</p>	
Evaluation	<p>6. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>	



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Lesson Plan No. 18	Course Name: Green Building Infrastructure and Architecture	Course No.: CE-604
Objective	At the end of the lesson the student shall be able to: 9. To know about the building energy conservation technologies 10. To understand the various technologies in energy conservation in building.	
Teaching Aids (if any)	Chalk Board and PPT.	
Teaching Development	11. Introduction (5 minutes) <ul style="list-style-type: none"> • Ask questions How buildings can more energy efficient? What are the five ways to save energy? 12. Development (30 minutes) <ol style="list-style-type: none"> a. Introduction to term energy conservation. b. Energy conservation and its importance? <p style="text-align: center;">Exercise (5 minutes) – What is one disadvantage of becoming more energy efficient.</p>	
Closure	13. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 14. Suggested Reading- https://www.youtube.com/watch?v=X-wYJIS_xhs . Spend 5 minutes to wrap up and consolidate the learning.	
Evaluation	7. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents	



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Lesson Plan No. 19	Course Name: Green Building Infrastructure and Architecture	Course No.: CE-604
Objective	At the end of the lesson the student shall be able to: 11. Explain Standards of energy efficiency in buildings. 12. Electricity consumption trends	
Teaching Aids (if any)	Chalk Board and PPT.	
Teaching Development	<p>13. Introduction (5 minutes)</p> <ul style="list-style-type: none"> • Ask questions Why energy efficient? Benefits of energy efficient buildings? <p>14. Development (30 minutes)</p> <p>13. Introduction to term energy efficiency in buildings.</p> <p>a. Graphically representation of energy conservation in buildings.</p> <p>- Discussed about implementation in energy efficiency in buildings.</p> <p style="text-align: center;">Exercise (5 minutes) – what are programme and schemes made by government?</p>	
Closure	<p>15. Summarize the Lesson Learning Outcomes and get affirmation from students on these.</p> <p>16. Suggested Reading- https://www.youtube.com/watch?v=X-wYJIS_xhs. Spend 5 minutes to wrap up and consolidate the leanings.</p>	
Evaluation	<p>8. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>	



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Lesson Plan No. 20	Course Name: Green Building Infrastructure and Architecture	Course No.: CE-604
Objective	At the end of the lesson the student shall be able to: <ul style="list-style-type: none"> • Understand Trends in energy consumption • Energy demand • Sources of energy 	
Teaching Aids (if any)	Chalk Board and PPT.	
Teaching Development	<p>15. Introduction (5 minutes)</p> <ul style="list-style-type: none"> • Ask questions • Do you Know Trends in energy consumption. • Demand of energy in various sectors Global energy consumption. <p>• Development (30 minutes)</p> <ul style="list-style-type: none"> • Energy Scenario in India • Energy Consumption by Sources: Overall Production and Consumption. • Growth of Production of energy resources. <p>Exercise- 5 minutes- Energy use Per capita energy consumption and Total energy production</p>	
Closure	<p>17. Summarize the Lesson Learning Outcomes and get affirmation from students on these.</p> <p>18. Suggested Reading- https://mpira.ub.uni-muenchen.de/16774/1/Trends_and_Patterns_of_Energy_Consumption_in_India.pdf.</p> <p>Homework-</p> <p>19. What are the 5 main sectors of energy consumption?</p> <p>Spend 5 minutes to wrap up and consolidate the leanings.</p>	
Evaluation	<p>9. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>	



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Lesson Plan No. 21	Course Name: Green Building Infrastructure and Architecture	Course No.: CE-604
Objective	At the end of the lesson the student shall be able to: <ol style="list-style-type: none"> 1. Energy efficiency measures in buildings 2. approaches 	
Teaching Aids (if any)	Chalk Board and PPT.	
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"> What are energy efficiency measures? What are energy efficient equipment's? What are the most energy efficient building materials? 2. Development (30 minutes) <ol style="list-style-type: none"> a. Introduction to term energy efficiency in buildings b. Why it is important? <p>Discussed.</p> <ol style="list-style-type: none"> a. Concept of embodied energy b. what are the different approaches in energy sufficient building. <p>Problem: What is the approach to make building energy efficient?</p>	
Closure	<ol style="list-style-type: none"> 1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://www.youtube.com/watch?v=fkpCYv9Mpio Spend 5 minutes to wrap up and consolidate the learning. 	
Evaluation	<ol style="list-style-type: none"> 1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents 	



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Lesson Plan No. 22	Course Name: Green Building Infrastructure and Architecture	Course No.: CE-604
Objective	At the end of the lesson the student shall be able to: <ol style="list-style-type: none"> 3. Energy efficiency materials 4. Energy efficiency equipment used in buildings 	
Teaching Aids (if any)	Chalk Board and PPT.	
Teaching Development	<ol style="list-style-type: none"> 3. Introduction (5 minutes) <ul style="list-style-type: none"> • Ask questions <ul style="list-style-type: none"> What is energy efficiency building materials? What is energy efficient equipment's? What are the uses of efficiency building materials? 4. Development (30 minutes) <ol style="list-style-type: none"> a. Introduction to term energy efficiency building materials and equipment's. b. Why it is important? <p>Discussed.</p> <ol style="list-style-type: none"> c. Life cycle design of sustainable materials. d. Concept of recycled materials. e. What are different types of energy efficient used for sustainable environment. <p>Problem: What are the advantages of energy efficiency building equipment's?</p> 	
Closure	<ol style="list-style-type: none"> 3. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 4. Suggested Reading <ul style="list-style-type: none"> https://neutrino bursts.com/energy-efficient-building-materials/. https://electricalnotebook.com/energy-saving-devices/. <p>Spend 5 minutes to wrap up and consolidate the learning.</p> 	
Evaluation	<ol style="list-style-type: none"> 2. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>	



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Lesson Plan No. 23	Course Name: Green Building Infrastructure and Architecture	Course No.: CE-604
Objective	At the end of the lesson the student shall be able to: <ol style="list-style-type: none"> 5. To know about the operating strategies in building. 6. To understand the Evaluation methods of energy savings. 	
Teaching Aids (if any)	PPT.	
Teaching Development	<ol style="list-style-type: none"> 5. Introduction (5 minutes) <ul style="list-style-type: none"> • Ask questions <ul style="list-style-type: none"> What are operating strategies in building? How to develop an operation strategy? What are the elements of operating strategy? 6. Development (30 minutes) <ol style="list-style-type: none"> a. Introduction to term operating strategies in building. b. Role of operating strategies c. Various types of operating strategies in building. d. Why it is important? <p>Discussed.</p> <ol style="list-style-type: none"> f. Examples of operation strategies used in building. g. Concept of operation strategies sourcing. <p>Exercise- Discuss about 5 Key Elements of an Operations Strategy</p>	
Closure	<ol style="list-style-type: none"> 5. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 6. Suggested Reading <ul style="list-style-type: none"> https://www.indeed.com/career-advice/career-development/operations-strategy. <p>Spend 5 minutes to wrap up and consolidate the learning.</p>	
Evaluation	<ol style="list-style-type: none"> 3. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>	



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Lesson Plan No. 24	Course Name: Green Building Infrastructure and Architecture	Course No.: CE-604
Objective	At the end of the lesson the student shall be able to: <ol style="list-style-type: none"> 7. To understand the Evaluation methods of energy savings. 8. To know about the energy evaluation criteria. 	
Teaching Aids (if any)	PPT.	
Teaching Development	<ol style="list-style-type: none"> 7. Introduction (5 minutes) <ul style="list-style-type: none"> • Ask questions <ul style="list-style-type: none"> What are energy saving methods? What are the factors effecting energy savings? What are the economic factors and initiatives taken in energy saving? 8. Development (30 minutes) <ol style="list-style-type: none"> a. Introduction to term Evaluation methods of energy savings. b. Role of operating strategies c. Various types of operating strategies in building. d. Why it is important? <p>Discussed.</p> <ol style="list-style-type: none"> h. Examples of operation strategies used in building. i. Concept of operation strategies sourcing. <p>Exercise- Discuss about 5 Key Elements of an Operations Strategy</p>	
Closure	<ol style="list-style-type: none"> 7. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 8. Suggested Reading <ul style="list-style-type: none"> https://www.indeed.com/career-advice/career-development/operations-strategy. <p>Spend 5 minutes to wrap up and consolidate the learning.</p>	
Evaluation	<ol style="list-style-type: none"> 4. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>	