

PREFACE

Effective Technical Education is vital among the key enablers of rapid Economic Growth. However the challenge today is to significantly improve the quality of the technical Education and move towards the goal of excellence. National Policy of Education (NPE), 1986 highlighted the need for strengthening the Polytechnic Education System to cater to the need of emerging industries and technologies. Therefore the existing education system needs to be supplemented with State-of-the-art ICT methodology to achieve world-class standards - the teaching-learning process to be aptly supported, as in the West, with visualizations of real-life examples, demonstrations and practical / industrial illustration for ease of comprehension and longer retention, resulting in virtually bringing the industry into the classroom.

Infoplus Technologies Private Ltd (Infoplus), an ISO 9001:2008 Certified Company, promoted by academicians and experienced team from engineering services, backed by an esteemed advisory council consisting of former Vice Chancellors, eminent professors and industry experts, has innovated newer and cost-effective delivery tools with digital learning contents, an integrated 3D medium platform for Technical education, skill Development and training, called **3DM™ Classroom** - powered by technology - to infuse ICT into Appropriate Areas of Quality Teaching and Learning, bringing products, machineries, equipment and the industry virtually to the class-room.

Major Features of the Product and benefits to the Institute and the students include:

1. Visual-rich Accelerated Learning-cum-Teaching Tool : Over 1000 slides of texts, 2D illustrated images, derivations and exercises as authoritative content conforming to the prescribed syllabus, aptly embedded with a large number of 3D animations of real-life applications and industry practices, facilitating quick grasp of the concepts and its applications enabling the student to perform his examination and job interviews with great success, thus transforming students from different environment "Industry-Ready".

2. An excellent Teacher-Aid: This ensures that the teacher has the best base content with large number of 3D visuals, to adapt for his lecture focusing more on effective delivery than on material preparation. Features include "interactive pen" to highlight key points / draw new diagrams; "Note Pad" to

add new notes; right-sized font and color scheme for clear visibility without darkening the class room; Print, Direct Access panel for content and video for easy access, Progress bar, status bar, keyword search for text & video, Self-assessment, Quiz, FAQ's; Audio and annotations in simple English for all visual illustrations; zoom features to cover over 60 students, if need be, in a classroom.

3. Non-Linear method of Teaching and Floating window: The total subject can be traversed for quick reference by click of a button – book-like indexing. Pictures / images and 3D demonstrations are made floating so that it could be stationed on any part of the screen, while viewing thro multipage derivations / problems / exercises.

4. Global Standards in Engineering Education : Authored by eminent Professors and subject experts from Academia and Industry, 3DM™ Classroom facilitates building excellence in the Technical / Vocational Education / skill development and training to meet the knowledge challenges of the 21st century and transform our country as a global knowledge leader.

5. Modularly Structured: The content is modularly structured for each branch of Engineering, enabling easy assembling for adaptation to specific requirement both in extent and / or depth of every University / Institute.

3DM™ technology-enabled education is the BEST SOLUTION for capacity-building of vital resources for rapid economic growth and to thin-down the Rural-Urban divide through bridging the gap between Industry and Institute, leading to ALL-INCLUSIVE and well-sustained GROWTH of our Country.

A detailed study of 3DM implementation has shown that the voluntary attendance and the mean score of the class have well improved. Further, the teacher could save 25% to 30% time in writing notes on the blackboard. Thus the use of 3DM™ Classroom facilitates increase in pass percentage and employability of the students and hence increases the intake of students by the Institute / College / University.

This hand book details all the features associated with 3DM™ Classroom so as to enable the Faculties to be more effective and efficient in the best interest of the students in particular and the State and Country in general.

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I. Hardware/Software Requirements:

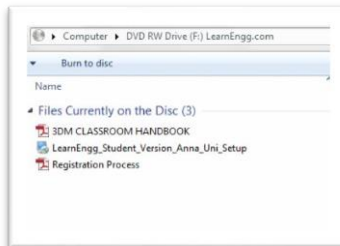
1. ROM : DVD
2. Processor : 2 GHz and above
3. RAM : 2 GB (minimum)
4. Hard Disk : 80 GB & Free space up to 50%
for buffering of data
5. OS : Windows XP/7/8 or above

II. Instructions for the DVD:

1. This is a DVD and will play only in DVD ROM.



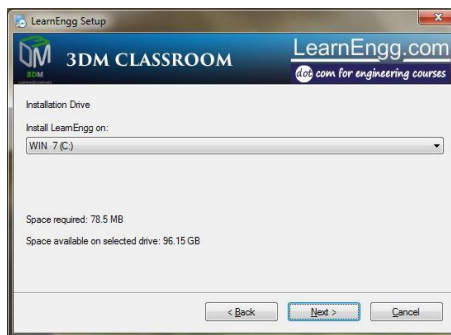
2. This DVD contains 3DM Classroom subject in exe format and a Hand book in pdf format.



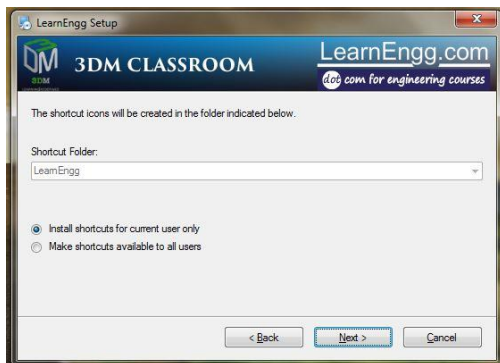
3. For the first time product installation & registration, **internet connectivity (No proxy) with admin privileges** are required. Kindly make sure these requirements are equipped in the system before installing the 3DM Classroom product.
4. Click on the Application file and follow the procedures as illustrated below.



5. The below figure shows on which drive the product needs to be installed.



6. Choose the second option and click on Next and finish the Installation.



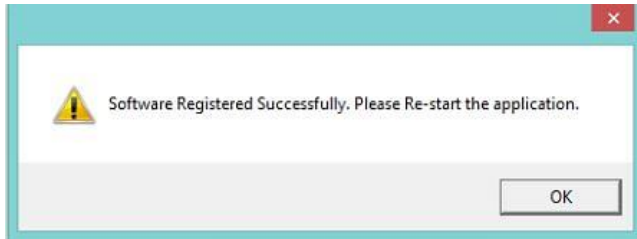
7. Start the application by clicking the Shortcut file created on the desktop.



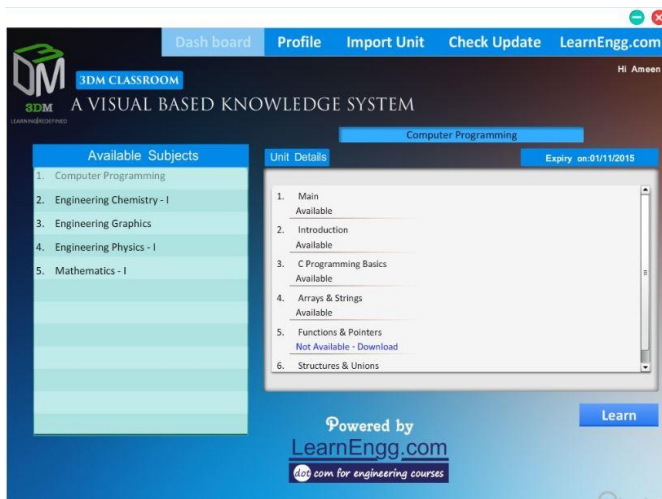
8. As shown in the below figure, fill all the details, then activate the product. **(Note: Internet connection without a proxy is needed here for the activation.)**

9. After clicking on the Register button, an OTP password will be sent to your registered mobile number and email id. Verify your registration by entering the OTP password and click verify button.

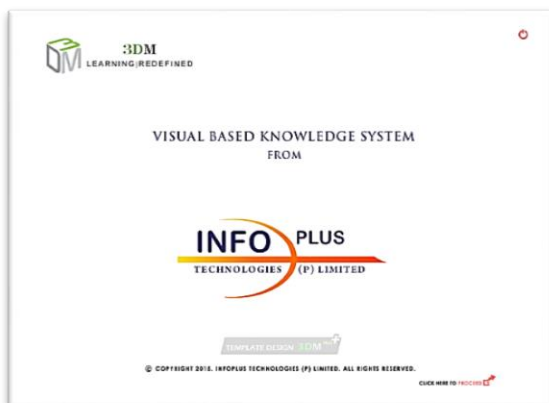
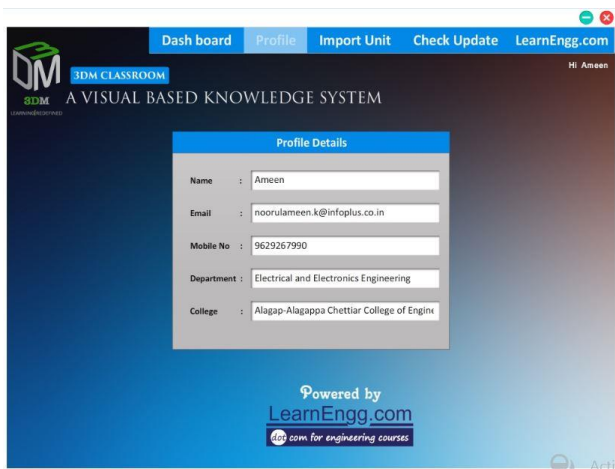
- Once the registration is completed, the following message will be displayed. You can restart the application.



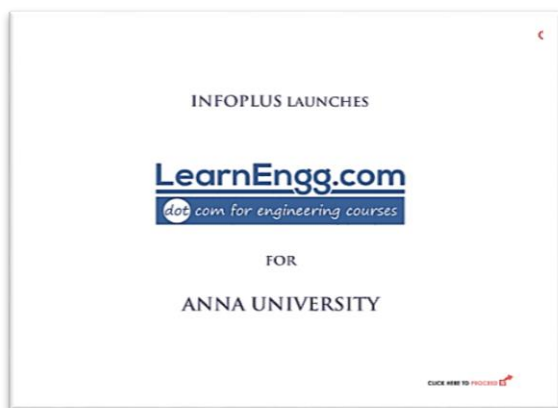
- User dashboard will be opened, where under Dashboard Menu you can access your subjects.

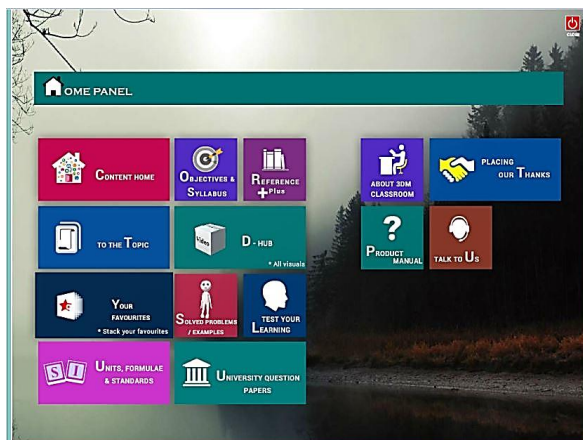


12. 3DM Classroom subject can be accessed by clicking on the shortcut file on the desktop. Click on proceed to go into the subject. If you want to close the subject, click on the close button located on the top-right corner.
13. Under Profile menu you can view your registration details.



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14. The above figure shows a Home panel tools which has options to view Course Objectives, Syllabus, Reference Books, 3DM Classroom - Profile, Direct Access to Content/Demonstrations, Bookmarks, Formulas, University Question papers, Assessment, Acknowledgement, Contacts and Help File. Clicking on any of the option will take to the particular page. To close/go to the subject page, click on close button.



15. This product is best to be viewed in 1024 X 768 resolution in monitor (Please check your display settings) and if Projector is used to view, then set the aspect ratio 4:3 or contact your administrator.
16. When settings are made for viewing in projector (4:3) you may find empty space on either side of your monitor, which is normal. Do not change the settings, this will enable best viewing in the projector/monitor.
17. For any Queries contact our Help desk
Email: support@learnengg.com
Phone: 1800 102 6488 (Toll free)

III. Instructions for the User Interface:

3DM CLASSROOM - TYPICAL USER INTERFACE

The screenshot displays the 3DM Classroom interface. The top navigation bar includes a search bar, a search option, and a search icon. The main content area is titled "Total internal reflection and Critical angle" and contains a definition of the critical angle. A diagram labeled "Fig 2: Critical angle" illustrates the concept with a horizontal interface between a "Rarer medium" (top) and a "Denser medium" (bottom). Three incident rays are shown: Ray 1 is at an angle less than the critical angle and refracts into the denser medium; Ray 2 is at the critical angle and refracts along the interface; Ray 3 is at an angle greater than the critical angle and undergoes total internal reflection. The interface also features a sidebar with navigation options like "Full content Displayer", "Bookmark", "Print", "Colour", "Help", and "Close". The bottom status bar shows the current chapter, lesson, and unit, along with a progress bar and a "D-HUB" button.

Chapter LESSON 20 TO 22: REFRACTION OF LIGHT
Unit UNIT 4 | 2.3 TOTAL INTERNAL REFLECTION AND CRITICAL ANGLE
Topic

Total internal reflection and Critical angle

Critical angle

- When a light ray passes from a denser medium to a rarer medium, the angle of incidence for which the angle of refraction becomes 90° is called Critical angle.

Fig 2: Critical angle

Explanation

- When a light ray passes from a denser medium to a rarer medium it is bent away from the normal.

Next button **Previous Button** **Progress bar** **Zoom** **Pen** **To the Topic** **D-HUB**

IV. HOME PANEL TOOLS

1. CONTENT HOME

Clicking on this icon, will take you to the content menu option where the table of contents will be present.



2. OBJECTIVES & SYLLABUS

This icon will lead you to course objectives page along with the syllabus



3. REFERENCE PLUS

Click on this icon to get various references about the subject



- Recommended text books - User can get a list of recommended text books for the particular/desired subject to refer.
- Content Reference books - Here user can get a list of books which are all related to the content of the particular/desired subject for reference.



- Web reference - Displays online/web references or links to refer.
- Video source - Displays online video references.



4. TO THE TOPIC

To see all the chapter title pages under every Unit.



5. D-HUB

Click on this to see all the Videos under every Unit.



6. Y-TUBE

User can view the list of bookmarked videos/favorite videos.



7. PRODUCT MANUAL

User can view the product manual for easy usability of the User Interface.



8. SOLVED PROBLEMS / EXAMPLES

On clicking this icon, user can have some of the examples/solved problems related to the particular chapter of every unit.



9. TEST YOUR LEARNING

User can test themselves by undertaking the assessment test under every unit.



10. SI UNITS, FORMULAE & STANDARDS

It displays all the SI units, abbreviations, formulae and standards which are related to the desired subject.



11. TOOLS

11.1 HOME

Clicking on this icon will take you to the home panel.



11.2 CLICK-BY-CLICK CONTENT DISPLAY (ON/OFF)

Using this option, all the content will be displayed at once rather than Click by Click.



11.3 CONTENT MENU

Click-on Content MENU [located at bottom-left to view units in the subjects]



Mouse-over & click on the Menu (button) to choose/ select your desired unit, which will pop-up lessons, which on click would further exhibit the topics in that specific lesson. This enables to navigate through any desired portion of the subjects – Demonstrating non- linear methodology of the product.

11.4 D-HUB

Click on this to get all the Videos under every Unit.



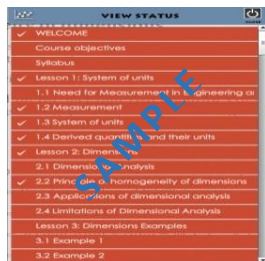
11.5 TO THE TOPIC

To see all the chapter title pages under every Unit.



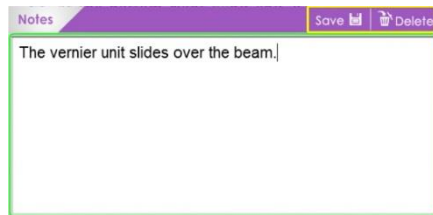
11.6 VIEW STATUS BAR

View status bar will list all topics and upon going to until the end of the page, a tick mark appears signifying that “Entire subject topics are successfully viewed by User”.



11.7 NOTES

Clicking on notes enable notepad for the purpose to add additional notes which could be stored and retrieved when required.



11.8 PEN

To highlight the key points, also to draw a new diagram or illustrate the existing diagram with features like:

- Pen
- Erase line
- Erase all
- Line thickness
- Color Panel



11.9 ZOOM

Click-On zoom to choose your desired option to maximize or minimize the content text.



- Zoom In
- Zoom out
- Actual Size



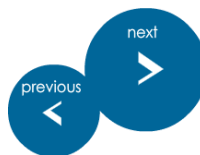
11.10 PROGRESS BAR

The progress bar displays the current progress of the entire subject in percentage.



11.11 PAGE NAVIGATION TOOL (PERVIOUS / NEXT)

Click on left / right arrows to move to previous or next page. Alternately, the left and right arrow keys of the system keyboard could also be used.



11.12 BOOKMARK

User can bookmark the pages which they wish to refer it in future. Under bookmark icon, two options will be present, one is to bookmark the desired page and another is to view the bookmarked pages.



11.13 PRINT

For printing the current page or specific page of a lesson.



11.14 HELP

User can view the product manual for easy usability of the User Interface.



11.15 SEARCH

Search by Text:

Search with keywords to reach your desired lesson/topic with ease.

Search 

Search by Video:

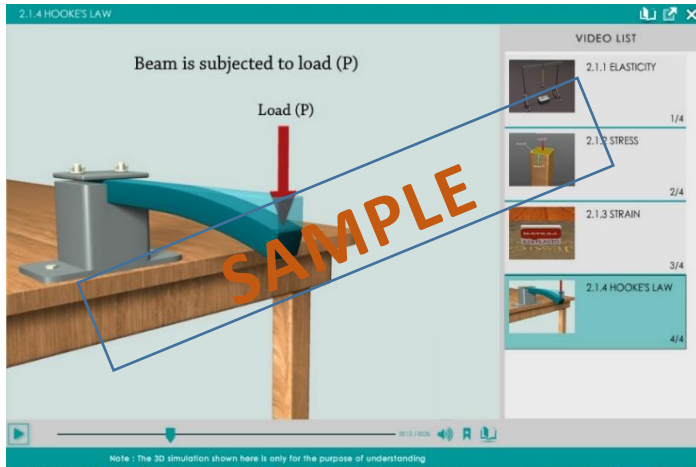
Search with keywords to view desired videos.

Search  

12. VIDEO

Click on the Video icon embedded within the content to view 3D/2D visual/video, relevant to the topic being taught.

Note: Video icon will work only on “Actual Size” mode and not in Zoom in/Zoom out mode.



- Each video (while playing the video) has features like Play, Pause, Stop, Replay, volume control and page scroll for viewing all videos & close options.



- Used to Bookmark the videos.



- Bookmarked/Favourite videos will be listed.



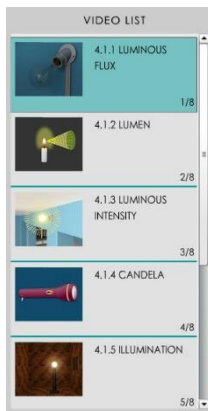
- Takes to the relevant content/topic page of the current video.



- To maximum & minimize video player. Video player can be dragged for the easy usability.



- Right side of the video player shows the list of videos present in the particular chapter.



Note: Closing video will get back to current topic page.

13. CONTENT DISPLAY

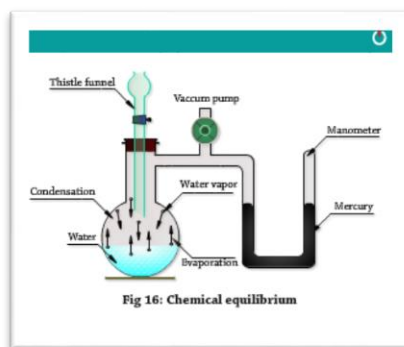
For every click, the contents will be displayed line by line until the end of the page which will be denoted by "page end" symbol.

-- PAGE END --

Alternatively, to view the full content of the page, navigate to next page (Next button) and use back arrow (Previous button) to view full previous page.

14. PICTURE POP UP

Click on the 2D Figure to keep it floating in the page on view so that reference can be made easily, when the page scrolls down in a multipage derivations / exercises. Similar to video, picture pop-up will work only on "Actual Size" mode and not in "Zoom In" / "Zoom Out" mode.



15. PAGE STATUS

Shows current page number and total number of pages in the particular chapter.

3 / 6

16. CLOSE / QUIT

To close the page or subject (located on top-right corner).





V. Help Desk

3DM Classroom support team is committed to provide support services to ensure that the products and services are up and working all the time.

e-mail: support@learnengg.com

Phone: 1800 102 6488 (Toll free)

