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Innovations by the Faculty in Teaching and Learning:

Innovative Teaching Methods-2021-22

Sr. No.	Name of Teacher	Name of Course	Semester	Innovative Category (PBL/ABL /EL/TEBL)	Innovative Method	Available on Website
1	Dr. Suresh Mali	DELD	Sem-I	TEBL	YouTube Video	Yes
2	Dr. Alpana Adsul	CC	Sem-I	TEBL	Simulation Tools	Yes
3	MS. RENUKA KAJALE	CC	Sem-I	TEBL	Simulation Tools	Yes
4	MR. MANAV ASHOK	SE	Sem-II	ABL	Quiz	Yes
5	MS. BORASTE SUPRIYA	WT	Sem-I	TEBL	NPTEL Video Series	Yes
6	MR. CHOUDHARI JORDAN	IOTES	Sem-I	TEBL	Simulation Tool	Yes
7	MR. PAWAR DIPALI	DAA	Sem-I	TEBL	YouTube Channel	Yes
8	MR. NITISH MALI	DSA	Sem-I	ABL	Brainstorming session	Yes
9	MR. SHEPAL YOGESH	TOC	Sem-I	ABL	Role Play activity	Yes
10	Ms Nikita Oswal	FDS	Sem-I	ABL	Mind map	Yes

PBL – Project Based Learning **ABL – Activity Based Learning**
EL – Experimental Learning **TEBL - Technology Enhanced Blended Learning**

Head of Department
Dr. Alpana Adsul

Principal
Dr. Suresh Mali

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Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Activity Based and Technology Enhanced Blended Learning
Title of Innovation method: Youtube
Faculty / Inventor: Dr. Suresh Mali
Course Name and Code: Digital Electronics and Logic Design
Class and Division: SE (A and B)
Goals / objective of the method: To understand the different Minimization Technique and Logic design.
Topic covered: Minimization of Boolean function using K-map
Description of method (8 – 10 lines):
The Karnaugh Map (K-map) is a graphical tool used to simplify Boolean expressions and minimize logic circuits. It is a systematic method of grouping terms in a truth table to find a simplified Boolean expression without losing the function's accuracy.
Benefits of the method:
Students are able to understand the K-map is excellent for small systems, it becomes impractical for more than 5 variables. For larger systems, methods like the Quine-McCluskey algorithm or software tools like EDA (Electronic Design Automation) are preferred. However, K-map remains a foundational tool for understanding Boolean logic and circuit simplification.
For review and critique contact: suresh.mali@dypcoei.com
For review and critique: As student are unable to understand**,** so K-map minimization is a very effective method for simplifying Boolean expressions in small to medium-sized systems and offers educational value in understanding digital logic. However, its practical use is limited in larger systems, where advanced algorithms or automated design tools become more appropriate.
Action taken based on review and critique:
As mentioned in the critique, K-map can be confusing for beginners, especially when dealing with larger numbers of variables.
1) Provide step-by-step examples, starting with 2-variable functions and gradually progressing to 3-variable and 4-variable maps.
2) Use visual aids such as animated tutorials or interactive K-map tools that help users visually group the 1s and 0s, showing how simplification happens in real time.
3) Offer a set of practice problems that gradually increase in complexity, starting from simple 2-variable K-maps and advancing to more complicated 4-variable maps.
4) Include edge cases, such as handling don't care conditions, which are often overlooked by beginners.

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Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Technology Enhanced Blended Learning

Title of Innovation method: Simulation Tool

Faculty / Inventor: Dr. Alpana Adsul

Course Name and Code: Computer Networks and Security (310244)

Class and Division: TE (A)

Goals / objective of the method: To creating network topologies or virtual environments.

Topic covered: Network Design and Troubleshooting

Description of method:

Packet Tracer is a cross-platform visual simulation tool designed by Cisco Systems that allows users to create network topologies and imitate modern computer networks. The software allows users to simulate the configuration of Cisco routers and switches using a simulated command line interface. Packet Tracer makes use of a drag and drop user interface, allowing users to add and remove simulated network devices as they see fit. The software helping them learn fundamental CCNA concepts.

Benefits of the method:

learning simulations provide learners with hands-on opportunities to apply theoretical concepts in realistic scenarios, fostering deeper engagement, improved retention, and practical skill development.

For review and critique contact: hod_computer@dypatilef.com

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Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Technology Enhanced Blended Learning
Title of Innovation method: Simulation Tools
Faculty / Inventor: Mrs Runuka Kajale
Course Name and Code: Cloud Computing (410253-C)
Class and Division: TE (B)
Goals / objective of the method: Simulation as teaching strategy has a purpose to give learners a safe space in which they can practice, make mistakes, and learn from them without fear of consequences in the real world. A simulated teaching strategy provides experiential learning by allowing students to apply theoretical information realistically. CloudSim Simulation Toolkit is the more generalized and effective simulator for testing Cloud computing-related hypotheses.
Topic Covered: CloudSim Simulation Toolkit
Description of method (8 – 10 lines):
By using CloudSim for cloud infrastructure simulation, researchers can simulate the following:

- VM placement and migration
- Task scheduling
- Resource provisioning
- Energy consumption and power management
- Load balancing across data centers

Benefits of the method: CloudSim provides a powerful platform for simulating cloud infrastructure. By modelling data centres, hosts, VMs, and tasks, you can replicate real-world cloud environments, test different resource management strategies, and analyse their performance under various conditions. CloudSim offers a flexible and cost-effective way to conduct cloud infrastructure research without the need for physical hardware.
For review and critique contact: renuka.kajale@dypatilef.com
Review and critique: Students asked Can we use cloudsim simulator to simulate vertical scaling of VMs? What about vertical scaling of hosts?
Action taken based on review and critique:
VerticalVmScaling - cloudsim-plus 6.2.9 javadoc

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Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Activity Based Learning
Title of Innovation method: Quiz
Faculty / Inventor: Mr. Manav Thakur
Course Name and Code: Software Engineering (210253)
Class and Division: SE (A, B)
Goals / objective of the method:
1. Making the process more engaging, efficient, and interactive.
2. Help teachers to assess and enhance students' learning experiences,

Topic covered: Fundamental concepts of Software engineering, Process models.
Description of method (8 – 10 lines):
The quiz method for teaching is an instructional strategy where quizzes are used as a tool to engage students, assess their understanding and reinforce learning. This method integrates quizzes into the teaching process to make learning interactive and effective.
Benefits of the method:
- Quizzes help students to review and consolidate the material they have learned.
- Active recall of information as well as Active engagement by students.
- Helps to assess the knowledge of students regarding specific topic.
- Teachers can get immediate feedback from students on the topic taught.
- Builds confidence among students about course.

For review and critique contact: manav.thakur@dypatilef.com
Review and Critique:
- Students understood the fundamentals of software engineering and process models.
- Students demanded more MCQs like the quiz conducted.
- Q/A session was conducted for those who were having queries.

Action taken based on review and critique:
Oral Feedback was taken from students. Feedback was positive. Students have shown interest and more engaged in the activity. As per the feedback received, more MCQs were shared with Students on their WhatsApp group.

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Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Technology Enhanced Blended Learning
Title of Innovation method: NPTEL Video Series
Faculty / Inventor: Mr. Boraste Supriya
Course Name and Code: Web Technology (310252)
Class and Division: TE (A & B)
Goals / objective of the method:

- To learn the fundamentals of web essentials and markup languages
- To use the Client-side technologies in web development
- To use the Server-side technologies in web development

Topic covered: Internet applications, World Wide Web, Designing web pages, DHTML, XML.
Description of method (8 – 10 lines):
This course provides a concise introduction to the fundamental concepts in web technology and internet. It will cover the standard and most popular Internet applications: FTP, Telnet, Email, Chat. World Wide Web: HTTP protocol. Designing web pages: HTML, forms, CGI scripts and clickable maps, JAVA applets, JAVA script, JAVA servlets, Perl. DHTML, XML.
Benefits of the method:
NPTEL (National Programme on Technology Enhanced Learning) offers a range of online certification courses, primarily in engineering, science, and humanities. Here are some of the key benefits of these courses:
Quality Content: NPTEL courses are developed by faculty from prestigious Indian Institutes of Technology (IITs) and Indian Institutes of Management (IIMs), ensuring high-quality educational content.
Flexible Learning: The courses are self-paced, allowing learners to study at their convenience, which is particularly beneficial for working professionals or students with busy schedules.
Accessibility: The courses are available online, making them accessible to anyone with an internet connection, regardless of geographical location.
For review and critique contact: supriya.boraste@dypatilef.com
Review and critique received:
Got Oral question as after certification & passing the exam whether students will get reimbursing of exam fees.
Action taken based on review and critique:
If students pass the exam with Elite+Gold medal then college will reimburse the 100% fees of the exam.

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Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Technology Enhanced Blended Learning
Title of Innovation method: Simulation Tool
Faculty / Inventor: Mr. Jordan Chaudhari
Course Name and Code: IOTES (310245A)
Class and Division: TE (B and C)
Goals / objective of the method: To understand the basic concepts using TINKERCAD simulation tool.
Topic covered: Interfacing of LED with Arduino Uno
Description of method (8 – 10 lines):
Interfacing an LED using Tinkercad involves creating a simple circuit simulation where the LED is connected to a power source, typically controlled by an Arduino. LED interfacing in Tinkercad involves designing and simulating an electronic circuit that allows an LED (Light Emitting Diode) to be powered and controlled, typically using an Arduino microcontroller. The purpose of this setup is to understand how LEDs work in a circuit and how to programmatically control them using a microcontroller. Tinkercad provides a user-friendly virtual environment where users can design, test, and simulate circuits without needing physical hardware. It's especially helpful for beginners and educators to experiment with electronics and programming concepts.
Benefits of the method:

- Visual Indicators: LEDs are often used in devices to show status or activity.
- Learning Platform: This project helps beginners understand basic electronics and programming with Arduino.
- Debugging: LEDs can serve as simple debugging tools in more complex circuits.

Proof Link:
For review and critique contact: jordan.chaudhari@dypatilf.com
Got oral critique:
Need more examples using Simulation software
Action taken based on review and critique:
One more simulation example of Data Acquisition System is explained.

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Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Technology Enhanced Blended Learning
Title of Innovation method: Youtube Channel
Faculty / Inventor: Mrs. Pawar Dipali
Course Name and Code: DAA (Design and Analysis of Algorithm) (410241)
Class and Division: BE (A, B)
Goals / objective of the method: To develop problem solving abilities using mathematical theories. To learn and apply algorithmic strategies while solving problems.
Topic covered: Greedy Strategy, Dynamic programming strategy.
Description of method (8 – 10 lines):
YouTube offers a highly flexible, accessible and engaging way to learn Design and Analysis of Algorithms**.** The visual nature of the content, expert insights, live coding sessions, and variety of perspectives can help students grasp complex concepts more effectively and apply them practically. Additionally, the ability to learn at your own pace and the interactive nature of the platform fosters both motivation and deeper understanding of algorithmic thinking.
Benefits of the method:
1. Visual and Interactive Explanations- Many YouTube tutorials on algorithms use animations and diagrams to explain complex concepts.
2. Diverse Content from Multiple Sources- YouTube provides access to a wide range of tutorials from different educators, programmers, and experts in the field, giving students a variety of teaching styles and approaches to choose from.
3. Flexible Learning Pace - You can pause, rewind, or fast-forward through videos depending on your needs. This flexibility allows you to learn at your own speed, spending more time on challenging topics or moving quickly through concepts you're already familiar with.
For review and critique contact: dipali.pawar@dypatilef.com
Review:

- Add more content
- Remove Background noise

Action taken based on review and critique:
Created new video and deleted previous one. Feedback is taken by using below google form.
Form link: https://forms.gle/oBkTV9TE5cx6Ex5L7

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Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Activity Based Learning
Title of Innovation method: Brainstorming Session
Faculty / Inventor: Mr. Nitesh Mali
Course Name and Code: (Data Structures and Algorithms) (210252)
Class and Division: SE (B&C)
Goals / objective of the method: A Collaborative Brainstorming Session
Topic covered: Real-World Applications of Data Structures in Modern Technology
Description of method (8 – 10 lines):
A brainstorming session, also known as a group discussion, is a collaborative opportunity for individuals to gather, exchange ideas, address challenges, and share perspectives. This could help the students to solve a specific problem, develop new ideas for a project, or improve a process. Also, student can improve the communication skills as well as can develop knowledge with others, also can build the confidence.
Benefits of the method:
1. The session allows students to express the, thoughts, opinions and enhance their skills in articulating ideas.
2. Involves students in the decision-making process, creating a sense of involvement and commitment.
3. Ideas are openly shared without instant critique, fostering an environment that reduces hesitation and enhances creativity.
Link of Proof:
For review and critique contact: nitesh.mali@dypatilef.com
Action taken based on review and critique:
Analysis of Feedback taken on the innovative teaching methods

- As faculty we provide a brief recap to ensure everyone is aligned on what was discussed.
- Took follow up of students to reflect on the discussion, including what they learned and areas they could improve.

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Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Activity Based Learning
Title of Innovation method: Simplification in problems by using Role Play activity
Faculty / Inventor: Mr. Shepal Yogesh
Course Name and Code: Theory of Computation (310242)
Class and Division: TE (A/B)
Goals / objective of the method: To engage participants in a simulated situation
Topic covered: Pushdown Automata /Turning Machine
Description of method (8 – 10 lines):
A Role Play activity is an interactive and dynamic exercise where participants take on specific roles and act out scenarios that simulate real-life situations. This activity is commonly used in various settings, such as classrooms, corporate training, therapy sessions, team-building events, and educational environments. The activity encourages participants to step into characters or personas that are different from their own, allowing them to engage in problem-solving, decision-making, and social interactions within the context of the scenario.
Benefits of the method:
Role play simulates real-life situations, providing participants with a practical way to apply knowledge and skills in a controlled environment. Many role play scenarios involve conflict, such as disagreements or misunderstandings, providing opportunities to practice conflict resolution techniques.
For review and critique contact: yogesh.shepal@dypatilef.com
Action taken based on review and critique:
Review:
The facilitator should circulate throughout the activity, ensuring that participants stay focused and engaged, and offering support when necessary.
Gather feedback from participants on how the role play could be more effective. Use this input to adjust future activities.
Critique:
Critiquing a role play activity allows for valuable insights into its effectiveness and areas that need adjustment. By ensuring clear instructions, structured feedback, and continued focus on learning outcomes, the activity can be significantly improved for future sessions.

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Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Activity Based Learning
Title of Innovation method: Mind map
Faculty / Inventor: Ms Nikita Oswal
Course Name and Code: Fundamentals of Data Structure (210242)
Class and Division: SE(A)
Goals / objective of the method: To understand the basic concepts of Data Structure
Topic covered: Basic concepts of FDS
Description of method (8 – 10 lines):
Mind maps are a powerful and versatile tool used for organizing ideas, brainstorming, problem-solving, and enhancing creativity. Mind maps are a highly effective tool for organizing and visualizing ideas. They foster creativity, enhance memory, and aid in problem-solving and project planning. Overall, mind mapping is a valuable asset for those looking to organize their thoughts or enhance their brainstorming sessions.
Benefits of the method:
Mind maps visually represent information, making it easier to see connections between ideas. This helps in brainstorming sessions, where new ideas can quickly flow and be organized logically.
A mind map helps break down complex ideas into simpler, digestible parts. By visually connecting different components, it becomes easier to understand relationships and hierarchies in the information.
Mind maps can be used in various scenarios, including learning, project planning, decision making, and creative writing. They are equally useful for individual and group settings.
For review and critique contact: nik.jain235@gmail.com
Action taken based on review and critique:
Analysis of Feedback taken on the innovative teaching methods
Mind map helps in Refining and organizing ideas for clarity and structure. Its helps in Prioritizing tasks or key points based on importance and periodic review and reflection on progress. It promotes collaboration and sharing for feedback and improvement. It also contributes in Visualization for effective communication.

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