Smt Indira Gandhi College of Engineering

Ghansoli – Navi Mumbai

Computer Engineering Department

Innovation in Teaching Learning Process - A. Y. 2023-24 Odd Sem							
Sr. No	**Faculty Name**	**Subject**	**Class**	**Sem**	**Innovative Category**	**Innovative Method**	**Available On Website**
1	Prof. Satish Kuchiwale	DS	SE	III	Experimental Learning	Industry based training	Y
2	Prof. Revti Jadhav	DLCA	SE	III	Teaching Enhanced Blended Learning	Virtual Lab	Y
3	Prof. Selvamurugan Kasi	OOPML	SE	III	Teaching Enhanced Blended Learning	Google Classroom	Y
4	Prof. Satish Kuchiwale	DWM	TE	V	Teaching Enhanced Blended Learning	Google Classroom	Y
5	Prof. Sarita Khedikar	SEL	TE	V	Project Based Learning	Mini Projects	Y
6	Prof. Sarita Khedikar	SE	TE	V	Teaching Enhanced Blended Learning	Google Classroom	Y
7	Prof. Jaspreet Kaur	PCEII	TE	V	Activity based learning	Paper presentation	Y
8	Prof. Jaspreet Kaur	PCEII	TE	V	Teaching Enhanced Blended Learning	Google Classroom	Y
9	Dr. K T Patil	CN	TE	V	Teaching Enhanced Blended Learning	Google Classroom	Y
10	Dr. Revti Jadhav	CNL	TE	V	Activity Based Learning	Seminar	Y
11	Dr. Shankar Patil	ML	BE	VII	Activity Based Learning	Brainstorming Session, Seminar	Y
12	Prof. Vaishali Yeole	BDA	BE	VII	Activity Based Learning	Flipped Classroom	Y
13	Prof. Jaspreet Kaur	CSL	BE	VII	Activity Based learning	Flipped Classroom	Y
14	Prof. Jaspreet Kaur	CSL	BE	VII	Teaching Enhanced Blended Learning	Google Classroom	Y
15	Selvamurugan Kasi	Blockchain	B.E	VII	Teaching Enhanced Blended Learning	Google Classroom	Y
16	Selvamurugan Kasi	Blockchain	B.E	VII	Project Based Learning	Mini Project	Y

Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Activity Based Learning-Flipped Classroom

A. Y. : 2023-24 (Odd Sem) **Class : SE Comp** **Course: Data Structure (CSC303)**

Faculty Name: Prof. Satish Kuchiwale

Goals / objective of the method:

1. Promote Active Learning
2. Improve Understanding of concepts
3. Maximize Classroom Time
4. Foster Self-Paced Learning

Topic covered: Applications of Binary Tree & Sums

Description of method:

A flipped classroom is an innovative teaching method that reverses the conventional learning model. Instead of attending lectures in class and completing assignments at home, students study new content independently at home through videos, readings, or other interactive resources. In class, they engage in practical, interactive activities that allow them to apply their knowledge, ask questions, and work with classmates. This approach emphasizes active learning over passive listening.

Benefits of the method:

• Classroom time is dedicated to problem-solving, engaging in discussions, and applying concepts to real-world scenarios.

• Teachers have more time to address individual student needs.

For review and critique contact: satish.kuchiwale@sigce.edu.in

Review and Critique:

Some students struggled to speak confidently, even though they knew the answers. Meanwhile, other students used this method as a chance to grasp the topic better, present their ideas, and build confidence in their understanding.

Action taken based on review and critique:

Students who initially struggled with speaking were motivated and supported, which encouraged them to participate actively.

Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Teaching Enhanced Blended Learning (TEBL)- Virtual Lab

A. Y. : 2023-24 (Odd Sem) **Class : SE Comp** **Course: DLCA(CSC304)**

Faculty Name: Mrs Revti Jadhav

Goals / objective of the method:

1. Promote Active Learning
2. Improve Understanding of concepts
3. Maximize Classroom Time
4. Foster Self-Paced Learning

Topic covered: NS2,NS3

Description of method:

Virtual labs allow students to access experiments and educational resources from anywhere with an internet connection, breaking down geographical barriers and promoting inclusivity

Benefits of the method:

• Students can learn at their own pace, revisiting experiments and modifying variables as needed, fostering a deeper understanding of concepts

• Virtual labs are accessible anytime, allowing students to engage in learning and experimentation at their convenience

For review and critique contact: revti.jadhav@sigce.edu.in

Review and Critique:

Virtual labs often include tools for data analysis and visualization, helping students to analyze and interpret experimental results

Action taken based on review and critique:

Dought clearing session was conducted in lab to solve the dificulties of the students.

Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Project Based Learning

Title of Innovation method: Mini project

Faculty / Inventor: Prof. Selvamurugan Kasi

A. Y. : 2023-24 (Odd Sem)

Course Name and Code: Object Oriented Programming with Java Lab

Class : SE Computer Engineeing

Goals / objective of the method:

1.To understand the fundamentals of object-oriented programming concepts.
2.To develop Java programs using classes, objects, inheritance, and polymorphism.
3.To implement real-world problem-solving using Java.
4.To practice exception handling, file I/O, and multithreading.
5.To build confidence in applying OOP principles in software development.

Topic covered: Mini Project

Description of method :

This mini project applies object-oriented programming concepts using Java to solve a real-world problem. It involves designing classes, using inheritance, polymorphism, encapsulation, and abstraction to build a modular and efficient application. The project also includes exception handling, file handling, and GUI or console-based interaction, demonstrating the practical use of OOP principles in Java.

Action Taken Based on Short Review and Critique:

1.Improved class structure by applying better encapsulation and modular design.
2.Refactored code to enhance readability and maintainability.
3.Fixed logical errors and improved exception handling.
4.Added comments and documentation for better code clarity.
5. Enhanced user interface for a smoother user experience.

Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Teaching Enhanced Blended Learning - Google Classroom

A. Y. : 2024-25 (Odd Sem) **Class : TE Comp** **Course: Data Warehousing & Mining (CSC504)**

Faculty Name: Prof. Satish Kuchiwale

Goals / objective of the method:

1. To create a platform for sharing course resources and evaluation.
2. To motivate self-directed learning through digital Course content.

Topic covered: Data Warehousing & Mining

Description of method:

Google Classroom is a powerful tool for students, providing a centralized platform for managing coursework, assignments, and communication. Its accessibility, organization, and integration with Google Workspace are significant strengths that benefit students.

Benefits of the method:

1. Offers an easily accessible platform for sharing knowledge
2. Enhances student's learning experiences by following classroom instruction.
3. Fosters peer-to-peer learning by facilitating discussions and comments.

For review and critique contact: satish.kuchiwale@sigce.edu.in

Review and Critique:

However, the platform has limitations, such as the need for a stable internet connection and limited customization.

Action taken based on review and critique:

Google Classroom is a solid platform for managing learning but could be further optimized to better address the diverse needs of students.

Innovations by the Faculty in Teaching - Learning
Category of Innovation method:Project Based Learning(PBL)
Title of Innovation method: Practicals on Mini Projects
Faculty Name: Prof Sarita Khedikar
A. Y. : 2023-24 (ODD Sem)
Course Name and Code: Software Engineering Lab (CSL502)
Class : TE Comp
Goals / objective of the method:
Mini project is a method where the group of participants share their views and opinions on a given topic within specific duration. Goal is to check the understanding of the topic and build confidence on Poblem Analysing, Requirment Gathering, risk assisment,project manegment etc.
Topic: Topics are as same as there third year mini pject 2A.
Description of method:
1. Given topic was disscued with students in the classroom. 2.students were allowed to revise this topic with there group members. 3. Then students ware instructed to draw flow chart, make us eof morden tools to genarate use case daigrams and project schedules. 4. Faculty monitors this proceedings and measure students' understanding level of the topic.
Benefits of the method:
•Mini Project promote deeper understandings of the topic. •Mini project promote teamwork and communication skills. • Teachers gets instant feedback (wheter or not students understands the taught topic) by momitoring students performance in practicals.
For review and critique contact: sarita.khedikar@sigce.edu.in
Review and Critique:
Some students were not able to express/talk confidently. Many students used this method as an opportunity to understand, present and to build confidence about topic.
Action taken based on review and critique:
Students who had faced talking issue, were motivated and encouraged to talk and thus they also participted.

Innovations by the Faculty in Teaching and Learning
Category of Innovation method: TEBL
Title of Innovation method: Google Classroom
Faculty / Inventor: Sarita Khedikar
A. Y. : 2023-24 (Odd Sem)
Course Name and Code: Software Engineering (CSC502)
Class : TE Comp
Goals / objective of the method:
1. To provide a digital repository of course material for students and peers.
2. To foster a habit of self-directed learning through digital Cousrse content.
3. To create a platform for sharing academic resources and evaluation.
Topic covered: Computer Network
Description of method:
The Google Claasroom, serves as dynamic platform for sharing, managing and evaluating course work. Students can access material at any time.
Benefits of the method:
1. Provides a readily accessible knowledge-sharing platform.
2. Enhances student's learning experiences by complementing classroom instruction.
3. Encourages peer-to-peer learning through discussions and comments.
For review and critique contact: sarita.khedikar@sigce.edu.in
Action taken based on review and critique:
Feedback emphasized the importance of including more multimedia content like videos and
info graphics. Adding important question bank. These have been added to enhance visual
learning.

Innovations by the Faculty in Teaching - Learning
Category of Innovation method: Activity Based Learning
Title of Innovation method: Paper presentation
Faculty Name: Prof. Jaspreet Kaur
A. Y. : 2023-24 (Odd Sem)
Course Name and Code:Principles of Communication and Ethics II(PCE II) CSL504
Class : BE Comp
Goals / objective of the method:
A paper presentation is an important academic and professional activity for several reasons: Communication Skills: It helps develop effective communication skills. Presenting research requires the ability to explain complex ideas clearly and concisely to an audience. Feedback and Critique: Presenting your work allows you to receive feedback from peers and experts. This can lead to improvements in your research and insights that you may not have considered. Networking Opportunities: Conferences and presentations provide opportunities to connect with other researchers, scholars, and professionals in your field. Networking can lead to collaborations, mentorships, and career opportunities. Visibility and Recognition: Presenting your research increases its visibility. It helps establish you as an expert in your area and can enhance your academic reputation.
Topic: Different current topics for each group
Description of method:
Each group is assigned a topic to prepare a presentation and present in a team
Benefits of the method:
Team work and leadership skills
For review and critique contact: jaspreet.kaur@sigce.edu.in
Review and Critique:
Students were marked based on their performance in the paper presentation.
Action taken based on review and critique:
Weak students were given another chance to perform.

Innovations by the Faculty in Teaching and Learning
Category of Innovation method: TEBL
Title of Innovation method: Google Classroom
Faculty / Inventor: Prof. Jaspreet Kaur
A. Y. : 2023-24 (Odd Sem)
Course Name and Code: Principles of Communication and Ethics II(PCE II)CSL504
Class : TE Comp
Goals / objective of the method:
1. To provide a digital repository of course material for students and peers.
2. To foster a habit of self-directed learning through digital Cousrse content.
3. To create a platform for sharing academic resources and evaluation.
Topic covered: Entire syllabus
Description of method:
The Google Claasroom, serves as dynamic platform for sharing, managing and evaluating course work. Students can access material at any time. resource.
Benefits of the method:
1. Provides a readily accessible knowledge-sharing platform.
2. Enhances student's learning experiences by complementing classroom instruction.
3. Encourages peer-to-peer learning through discussions and comments.
For review and critique contact: jaspreet.kaur@sigce.edu.in
Action taken based on review and critique:
More club based activities to be included for personality grooming.

Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Activity Based Learning-Flipped Classroom

A. Y. : 2023-24 (Odd Sem) **Class : TE Comp** **Course: Computer Network (CSC503)**

Faculty Name: Dr. K. T. Patil

Goals / objective of the method:

1. Promote Active Learning
2. Improve Understanding of concepts
3. Maximize Classroom Time
4. Foster Self-Paced Learning

Topic covered: Framing Techniques

Description of method:

A flipped classroom is an instructional approach where traditional learning methods are reversed. Instead of listening to lectures during class and doing assignments at home, students can learn new content at home through videos, readings, or interactive materials.They get engaged in interactive, hands-on activities during class to apply their knowledge, ask questions, and collaborate with peers. This method shifts the focus from passive to activelearning.

Benefits of the method:

- Classroom time is spent solving problems, engaging in discussions, and working on real worldapplications.
- Group activities promote teamwork and communication skills.
- Teachers have more time to address individual student needs.

For review and critique contact: kishor.patil@sigce.edu.in

Review and Critique:

Some students were not able to express/talk confidently although they were knowing answers. Remaining students used this method as an opportunity to understand, present and to build confidence about topic.

Action taken based on review and critique:

Students who had faced talking issue, were motivated and encouraged to talk and thus they also participted.

Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Activity Based Learning-Simulation Tools

A. Y. : 2023-24 (Odd Sem) **Class : TE Comp** **Course: Computer Network (CSC503)**

Faculty Name: Dr. K. T. Patil

Goals / objective of the method:

1. Promote Active Learning
2. Improve Understanding of concepts
3. Maximize Classroom Time
4. Foster Self-Paced Learning

Topic covered: NS2,NS3

Description of method:

Skill-based workshops offer a chance for students to learn new skills, improve their existing skills and develop expertise in specific areas. By attending these workshops, students can gain practical knowledge and hands-on experience.

Benefits of the method:

- Classroom time is spent solving problems, engaging in discussions, and working on real worldapplications.
- Attending skill-based workshops can have a significant impact on a student's future career prospects. By developing technical and soft skills
- Teachers have more time to address student needs.

For review and critique contact: kishor.patil@sigce.edu.in

Review and Critique:

By attending these workshops, students can gain practical knowledge and hands-on experience, few were not able to perform the task.

Action taken based on review and critique:

Dought clearing session was conducted to solve the dificulties of the students.

Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Activity Based Learning-Brainstorming Session, seminar

A. Y. : 2023-24 (Odd Sem) **Class : BE Comp** **Course: Machine Learning (CSC701)**

Faculty Name: Dr. S. M. Patil

Goals / objective of the method:

1. Actively engage students
2. Promote critical thinking
3. Create a collaborative learning environment.

Topic covered: Machine Learning Algorithams

Description of method:

Brainstorming session encourages students to analyze problems, think creatively, and explore multiple solutions. Students actively participate in generating ideas, which keeps them engaged and fosters a deeper understanding of the subject. It provides a platform for students to think freely and come up with innovative ideas without fear of being judged. Also, it promotes teamwork as students work together to share and refine ideas.

Benefits of the method:

• Fosters Problem-Solving Skills, Engages Diverse Learners

For review and critique contact: shankar.patil@sigce.edu.in

Review and Critique:

Some students were not able to solve the problems. In active learning student do it.

Action taken based on review and critique:

Students who had problem solvingissue, were motivated and encouraged to solve the problems.

Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Activity Based Learning-Flipped Classroom

A. Y. : 2023-24 (Odd Sem) **Class : BE Comp** **Course: Big Data Analytics (CSC702)**

Faculty Name: Prof.Vaishali Yeole

Goals / objective of the method:

1. Promote Active Learning
2. Improve Understanding of concepts
3. Maximize Classroom Time
4. Foster Self-Paced Learning

Topic covered: Big Data Architecture and Tools

Description of method:

Pre-class: Research various tools like Hive, Pig, Spark, Kafka, etc.

 In-class: Compare tools in groups and present which one suits a given scenario.

A flipped classroom is an instructional approach where traditional learning methods are reversed. Instead of listening to lectures during class and doing assignments at home, students can learn new content at home through videos, readings, or interactive materials.They get engaged in interactive, hands-on activities during class to apply their knowledge, ask questions, and collaborate with peers. This method shifts the focus from passive to activelearning.

Benefits of the method:

- Classroom time is spent solving problems, engaging in discussions, and working on real worldapplications.
- Group activities promote teamwork and communication skills.
- Teachers have more time to address individual student needs.

For review and critique contact: Vaishali.Yeole@sigce.edu.in

Review and Critique:

Some students were not able to express/talk confidently although they were knowing answers. Remaining students used this method as an opportunity to understand, present and to build confidence about topic.

Action taken based on review and critique:

Students who had faced talking issue, were motivated and encouraged to talk and thus they also participted.

Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Activity Based Learning-Flipped Classroom

A. Y. : 2024-25 (Odd Sem) **Class : BE Comp** **Course:Cyber Security and Laws(ILO7016)**

Faculty Name:Prof. Jaspreet Kaur

Goals / objective of the method:

1. Promote Active Learning
2. Improve Understanding of concepts
3. Maximize Classroom Time
4. Foster Self-Paced Learning

Topic covered: Framing Techniques

Description of method:

A flipped classroom is an instructional approach where traditional learning methods are reversed. Instead of listening to lectures during class and doing assignments at home, students can learn new content at home through videos, readings, or interactive materials.They get engaged in interactive, hands-on activities during class to apply their knowledge, ask questions, and collaborate with peers. This method shifts the focus from passive to activelearning.

Benefits of the method:

- Classroom time is spent solving problems, engaging in discussions, and working on real worldapplications.
- Group activities promote teamwork and communication skills.
- Teachers have more time to address individual student needs.

For review and critique contact:jaspreet.kaur@sigce.edu.in

Review and Critique:

Students were asked to read case studies of cyber criminals and how their offense differed from the country of residence to the country of crime conducted.

Action taken based on review and critique:

None

Innovations by the Faculty in Teaching and Learning
Category of Innovation method: TEBL
Title of Innovation method: Google Classroom
Faculty / Inventor: Prof. Jaspreet Kaur
A. Y. : 2024-25 (Odd Sem)
Course Name and Code: Cyber Security and Laws(ILO7016)
Class : BE Comp
Goals / objective of the method:
1. To provide a digital repository of course material for students and peers.
2. To foster a habit of self-directed learning through digital Cousrse content.
3. To create a platform for sharing academic resources and evaluation.
Topic covered: Entire syllabus
Description of method:
The Google Claasroom, serves as dynamic platform for sharing, managing and evaluating course work. Students can access material at any time. resource.
Benefits of the method:
1. Provides a readily accessible knowledge-sharing platform.
2. Enhances student's learning experiences by complementing classroom instruction.
3. Encourages peer-to-peer learning through discussions and comments.
For review and critique contact: jaspreet.kaur@sigce.edu.in
Action taken based on review and critique:
Feedback emphasized the importance of including more multimedia content like videos and
info graphics. Adding important question bank. These have been added to enhance visual
learning.

Innovations by the Faculty in Teaching and Learning
Category of Innovation method: Teaching Enhanced Blended Learning
Title of Innovation method: Google Classroom
Faculty / Inventor: Prof. Selvamurugan Kasi
A. Y. : 2023-24 (Odd Sem)
Course Name and Code: Blockchain(CSDC7022)
Class : BE Computer Engineeing
Goals / objective of the method:
1.To understand blockchain fundamentals through structured online learning. 2.To deliver and access blockchain-related content anytime, anywhere. 3.To encourage interactive learning via assignments, quizzes, and discussions. 4.To simplify project submissions and feedback using digital tools. 5.To track student progress and enhance engagement in blockchain topics.
Topic covered: Block chain
Description of method:
The method involved delivering blockchain concepts through Google Classroom by sharing lecture notes, videos, and tutorials. Students engaged in discussions, completed assignments, and received feedback online. The platform enabled continuous learning, easy access to resources, and efficient progress tracking, making blockchain education more interactive and accessible.
Benefits of the method:
1.Easy access to blockchain learning materials anytime, anywhere 2.Interactive and organized course delivery 3.Quick submission and evaluation of assignments 4.Real-time feedback and communication 5.Encourages self-paced and collaborative learning
For review and critique contact: selvamurugan.kasi@sigce.edu.in
Action taken based on review and critique:
1.Updated course materials for better clarity and engagement 2.Added more real-world blockchain examples and use cases 3.Improved assignment structure based on student feedback 4.Enhanced interaction through live Q&A and discussion threads 4.Provided additional resources for self-paced learning

Innovations by the Faculty in Teaching and Learning

Category of Innovation method: Project Based Learning -

Title of Innovation method: Mini project

Faculty / Inventor: Prof. Selvamurugan Kasi

A. Y. : 2023-24 (Odd Sem)

Course Name and Code: Blockchain Lab

Class : BE Computer Engineeing

Goals / objective of the method:

1.To apply blockchain concepts in a real-world mini project.
2.To understand smart contracts and decentralized applications.
3.To gain hands-on experience with blockchain tools and platforms.
4.To develop secure, transparent, and tamper-proof solutions.
5.To enhance problem-solving skills using blockchain technology.

Topic covered: Mini Project

Description of method :

The mini project was developed by identifying a real-world problem and designing a blockchain-based solution. Smart contracts were written and deployed using platforms like Ethereum or testnets. Tools like Remix, MetaMask, and Web3.js were used for development and testing. The project involved coding, deploying, and verifying transactions to demonstrate the benefits of blockchain technology.

Action Taken Based on Short Review and Critique:

1.Optimized smart contract code for better performance and security
2.Fixed deployment issues on the testnet based on feedback
3.Improved user interface for easier interaction
4.Added comments and documentation for better understanding
5.Included more test cases to ensure reliability and accuracy