



**KALASALINGAM**  
**ACADEMY OF RESEARCH AND EDUCATION**  
**(DEEMED TO BE UNIVERSITY)**

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## Computer Science and Engineering

### **Innovative Practices followed by the Faculty members in Teaching Learning Process:**

In the Department of Computer Science and Engineering, much importance is given for incorporating innovative techniques in teaching. During the beginning of every semester, a refresher program is conducted to share the innovative practices followed by other faculties pertaining to a new/enriched course offered in the semester. Such brainstorming sessions help transfer the best practices amongst faculties in the department. Pedagogies, Innovative Assessments, Assignments, Content-out-of-Syllabus are typically discussed in the sessions. Faculty members use the LCD Projectors for their presentations. The faculty members use these aids to take the teaching learning process to the next level.

Lectures are presented by faculty members using a variety of teaching tools such as chalk and board, PowerPoint presentation, video lectures, models, charts, animation, and other teaching techniques such as lecture, group discussion, seminar, tutorials, guest lectures, and demonstration. Apart from this, the following are the various innovative practices and pedagogical methods are followed at CSE department to enhance Teaching- Learning.

List of Innovative practices and Pedagogical methods followed by CSE Faculties:

| S.no | Name Of The Faculty | Course Code | Course Name                       | Innovative Pedagogy Adopted  | Impact On Student  |
|------|---------------------|-------------|-----------------------------------|--|--|
| 1    | Dr.Ramalakshmi R.   | INT18R371   | Database Management Systems       | Project based Learning using NoSQL MongoDB   | Learnt NoSQL MongoDB and developed real time projects for data analytics applications  |
|      |                     | CSE18R25    | Predictive Analytics              | Project based Learning using R Programming and Tableau for industry problems   | Students learnt data visualization using Tableau and developed solutions to real time industry problems using R tool. Students also learnt technical report writing. |
|      |                     | CSE18R272   | Java Programming                  | Project based learning as Mini Project and it was given maximum weightage in the evaluation. The students have implemented the domain specific topics as their project like cyber security, AI/ML, Data Science etc. | Students have developed solutions using Java programming concepts to solve real world problems. They have also submitted project reports.                            |
| 2    | Dr. Kartheeban K.   | CSE18R272   | Java Programming                  | Experiential Learning  | Students were given innovative assignments and submitted. Conducted quiz online  |
| 3    | Dr. R. Murugeswari  | CSE18R252   | Formal Language and Automata      | Problem based learning   | Using JFLAP simulation tool students understand the problems easily  |
| 4    | Dr.Kanniga Devi R.  | CSE18R111   | Information Security Fundamentals | Experiential learning  | Students take initiative, make decisions, and be accountable for the results.  |

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| 5  | Dr. Pitchai Manickam B     | CSE18R211  | IT Physical Security and System Security | Experimental learning  | Students acquire the knowledge with the help of vulnerability tools and system security tools                           |
| 6  | Dr.Dhiliphan Rajkumar T.   | CSE18R466  | BIG DATA                                 | Research Project Based Learning  | Students taken initiative in writing research article and doing experiments in recent tools like Hadoop, Pig, Table etc |
| 7  | Dr.Brintha N. C.           | CSE18R111  | Information Security Fundamentals        | Experiential Learning  | Students use wide range of technologies, available tools, in information security and cyber space                       |
| 8  | Dr. C. Balasubramanian     | ECE18R221  | Analog Electronics                       | Experiential Learning  | Students gained the knowledge on working principles of transistors and diodes using practical assignments               |
| 9  | Dr. J. Jane Rubel Angelina | CSE18R274  | Compiler Design                          | Problem based Learning - Learning by practicing GATE problems  | Students got equipped to face GATE exam questions in Compiler   |
| 10 | Mr. Raja M.                | CSE18R264  | IT Application Security                  | Student-centered learning through Course related online certification  | Students will do course related online course to get more exposure. beyond the Syllabus Teaching                        |
| 11 | Mrs. Jeyaranjani J.        | CSE18R173  | Design and Analysis of Algorithms        | Experiential Learning  | Students provide algorithmic solution for complex problem statement and compete potentials in online portal             |
| 12 | Mr. Velmurugadass P.       | 212CSE2301 | Data Structures                          | Case Study based Learning - Case Study question based on DS with search engine process and sample answer<br>Interactive Instruction : Group Discussion and Quizzes | Students are able to understand the data, preprocessing the data and analyze the data organization prediction           |

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|    |                      |            |                              | Learning Management System (LMS) materials, NPTEL videos |   |
| 13 | Dr. Nagaraj P.       | CSE18R252  | Formal Language and Automata | Inquiry Based Learning                                   | Inquiry-based learning asks students to develop their own knowledge via experiences and explorations rather than the teacher telling them all they need to know.                  |
| 14 | Mr. Nagarajan M. K.  | CSE18R371  | Computer Networks            | Demonstration-based learning                             | laboratory exercises will be demonstrated though live demo and video demo   |
| 15 | Mrs.ShanmugaPriya S. | CSE18R371  | Computer Networks            | Cisco packet Tracer                                      | Students implement the concept learnt using the simulator   |
| 16 | Mr. Raja Sekar R.    | CSE18R252  | Formal Language and Automata | JFLAP Simulator Tool                                     | Students experimented the Simulation tool for the topics PDA and Grammar from unit III  |
| 17 | Mr. Vignesh K.       | CSE18R303  | Perfective Analytics         | Research analysis assignment on real time Data set       | Students are able to understand the data, preprocessing the data and analyze the data with prediction   |
| 18 | Dr.S.J.Subhashini    | 212CSE2403 | Java Programming             | Team Based Learning                                      | Students were randomly organized into group of 10, The grouping was done in such a way to help the slow learners. With the knowledge of the concepts taught in class,             |
| 19 | Dr.M.Jayalakshmi     | 212CSE2301 | Data Structures              | Active Learning-Mud Card & Jigsaw                        | Through Mudcard activity students have the opportunities to point out what they are most confused about and clearly explain what is muddy. Jigsaw is a cooperative group activity |

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|    |                      |                          |  |   | in which students are interdependent to clear the muddiest point.  |
| 20 | Dr.P. Mangalraj      | 18R292                   | Algorithms for Intelligent Systems and Robotics                            | Active learning, Experiential learning through Project, and Problem Solving | Students are able to focus on the concepts and indepth understanding of logics were achieved through active learning. The project assigned to them helped to achieve the experiential learning by developing prototypes to apply the proof of concepts in real time. Problem solving techniques help the students to analyze the mathematical background for the algorithms. |
| 21 | Dr.T.SamPradeep raj  | 212CSE2403               | Java Programming   | Experiential Learning   | Students are able to understand and apply the concept in real time Application, and Submit Innovative Assignment and Project   |
| 22 | Mrs.J.Loyola Jasmine | 212CSE2302<br>212CSE2102 | Digital principles & System Design.Computer Architecture and Organization. | Experimental Exploration  | Students are asked to implement the theoretical knowledge in real time application.  |
| 23 | Dr.A.Pandiaraj       | 212CSE2403               | Java Programming   | Experiential Learning   | Students are able to apply the concept in real time Application, and Submit Innovative Assignment and miniproject  |

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| 24 | Mrs. S. Amutha | CSE18R387  | Computational Linguistics And Natural Language Processing       | Visual Learning With Mindmapping   | A visual way to represent concepts and ideas and capture their thinking   |
| 25 | Dr.K.Maharajan | 212CSE1101 | IT Infrastructure Overview And Landscape                        | <a href="https://www.missiontolearn.com/note-taking/">https://www.missiontolearn.com/note-taking/</a>            | Notes taking one of the Life Long Active Learning Method, It has the following features, 1.organized so that they can easily be accessed and reviewed, 2.reviewed multiple times over time,3. Re worked and re-stated in your own language.   |
|    |                | CSE18R292  | Algorithms For Intelligent Systems And Robotics-Types Of Robots | Gallery Walking  | Gallery Walk has the additional advantage of promoting cooperation, listening skills, and team building.  |
| 26 | Ms.P.Anitha    | CSE18R387  | Computational Linguistics And Natural Language Processing       | Project Based Learning   | Students can provide a solution for the real time problems with help of various Natural language processing techniques. And they can implement them in various platforms like google colab. students can also improve their python programming skills and they can learn to work on different platforms like python Jupiter, Notebook and spider etc. |
| 27 | Ms.G.Kothai    | CSE18R387  | Computational Linguistics And                                   | Case study based learning for every concepts , Conducted quiz during class session to revise the concepts, Group | Case study and industrial problems are concentrated. Groups are formed by 4 in number and allotted the mini projects. The   |

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|    |                       |            | Natural Language Processing             | discussion on new concepts before entering the case studies , the lab experiments are organized in colab   | Case study was allotted for every unit for each group. Mini projects are based on research ideas  |
| 28 | Ms. Jayanthi J.       | CS18R369   | Computational Intelligence              | GDrive,Google classroom, Slide, whiteboard, video Quiz Using Google Forms, Virtual lab MATLAB  | students can be able to understand the concepts   |
| 29 | Mr.C.Sivamurugan      | 212CSE2302 | Digital Principles & System Design      | PPT Slides and shared materials on Online, online Quiz, Online Practical Assignments, IC Based Projects and Paper Assignments & Class Tests  | students can be able to understand the concepts   |
| 30 | Mr. Abhishek Tripathi | 212CSE2302 | Digital principles & System Design.     | Hardware Project and Virtual Experiment Centric Pedagogy, PPT Slides, Videos.  | students can be able to understand the concepts   |
| 31 | Manikandan. V         | 212CSE2302 | Digital principles & System Design      | Mini-projects on real time applications , Assignments with different questions for each student, Interactive teaching by making students deliver the previously taught/discussed topic on board, PPTs and videos | Students get the insight about the real time applications. Students understand and really learn to do the assignments. Students are more attentive, as they had to present the concept again in the board. Many innovative ideas gets generated from the students |
| 32 | Mari Selvan. R        | 212CSE2102 | Computer Architecture and Organization. | Digital IC based Mini projects done by students. Technical assignments given to students   | students can be able to understand the concepts   |
| 33 | Ms. K. Bavani         | CSE18R274  | Compiler Design                         | Experimental learning (Lex and Yacc Tool)  | Students understood about developing LEX and YACC programs for lexical and syntax analysis phases of the Compiler   |
| 34 | Ms. Syed Ali Fathima  | 212CSE2301 | Data Structures                         | White Board, PowerPoint Presentation, assignments given to students  | Students understood the algorithms and steps. Problems also given to the students   |

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| 35 | Ms. Vetriselvi     | 212CSE2403 | Java Programming                         | hands on practice for each and every concepts in java  | Students get the frequency and flow of coding for all levels of programming  |
| 36 | Ms. N. Kirthiga    | 212CSE1101 | IT Infrastructure and Landscape Overview | Case Study based Learning - Case Study question based on IT Industry and sample answer<br>Interactive Instruction : Group Discussion and Quizzes<br>Learning Management System (LMS) materials, NPTEL videos | Students can be able to understand the concept of IT Infrastructure and establish new IT infrastructure for various Organization/Sector.   |
| 37 | Mr. S. Sureshkumar | 212CSE2403 | Java Programming                         | Demonstration Problem Solving<br>Experiential Learning Project Based Learning<br>Kalvi - LMS used for sharing the materials and conducted the online Quizes.   | Students understood the concept of oops and able write the program. They have started their project work and learning advanced concepts of Java such as Swing, AWT and Mobile Application Development. |

Faculties are also involved in content development and the same is available publicly in KALVILMS, Websites like google sites, wordpress and YouTube, for the reference of Students, researchers and faculties from other Universities and Colleges.



## Instructional Materials Developed by Faculty:

| S. No | Name of the Faculty         | Topic Covered   | Link  |
|-------|-----------------------------|---|---|
| 1.    | Dr.P.Deepalakshmi           | Software Project Estimation   | <a href="https://www.youtube.com/watch?v=CgTEoekNYRs">https://www.youtube.com/watch?v=CgTEoekNYRs</a>   |
|       |                             | People in Project Management  | <a href="https://www.youtube.com/watch?v=QN7qSnMVkmE">https://www.youtube.com/watch?v=QN7qSnMVkmE</a>   |
| 2.    | Mr. K. Vignesh              | Data Structure Vs Database  | <a href="https://www.youtube.com/watch?v=-qutIn6vM0Q">https://www.youtube.com/watch?v=-qutIn6vM0Q</a>   |
| 3.    | Dr.P. Muthuvel              | Digital Signal Processing Applications                                    | <a href="https://youtube.com/watch?v=4F_uLm-qDGA">https://youtube.com/watch?v=4F_uLm-qDGA</a>   |
|       |                             | Embedded Product Development Life Cycle                                   | <a href="https://www.youtube.com/watch?v=Y2qCypzh_yE&amp;list=PLr7cFBvDwddVVmtylW2zt_POFFZKIyoZ0&amp;index=13">https://www.youtube.com/watch?v=Y2qCypzh_yE&amp;list=PLr7cFBvDwddVVmtylW2zt_POFFZKIyoZ0&amp;index=13</a> |
| 4.    | Mr.R.Raja<br>subramanian    | Pointers in C   | <a href="https://www.youtube.com/watch?v=jsmOfa6YfHE">https://www.youtube.com/watch?v=jsmOfa6YfHE</a>   |
|       |                             | Web Scrapping using Python  | <a href="https://www.youtube.com/watch?v=T-T3gnaYE1A">https://www.youtube.com/watch?v=T-T3gnaYE1A</a>   |
|       |                             | Changing values of constant integers using Pointers                       | <a href="https://www.youtube.com/watch?v=7p2UcnjsRX0">https://www.youtube.com/watch?v=7p2UcnjsRX0</a>   |
| 5.    | Dr. P.Nagaraj               | SIC/XE Machine Architecture   | <a href="https://www.youtube.com/watch?v=F19yoLt_1mk">https://www.youtube.com/watch?v=F19yoLt_1mk</a>   |
|       |                             | Assemble & Assembler Algorithm, Data Structures                           | <a href="https://www.youtube.com/watch?v=K9ewyaU8-xQ">https://www.youtube.com/watch?v=K9ewyaU8-xQ</a>   |
| 6.    | Mrs.S.Amutha                | Secure Network Intrusion Detection  | <a href="https://youtu.be/EYLhNiVIL3s">https://youtu.be/EYLhNiVIL3s</a>   |
| 7.    | Dr.J Jane Rubel<br>Angelina | Function overloading in C++   | <a href="https://www.youtube.com/watch?v=7bKUfPL81bE">https://www.youtube.com/watch?v=7bKUfPL81bE</a>   |
|       |                             | How to access the Moodle course components on Object oriented programming | <a href="https://www.youtube.com/watch?v=wyeQqnSE738">https://www.youtube.com/watch?v=wyeQqnSE738</a>   |
| 8.    | Ms.J.Jeyaranjani            | PERL Control statements   | <a href="https://www.youtube.com/watch?v=gGNdJ4xLdQY">https://www.youtube.com/watch?v=gGNdJ4xLdQY</a>   |
|       |                             | PERL Basics   | <a href="https://www.youtube.com/watch?v=h0vRohcWf8Q">https://www.youtube.com/watch?v=h0vRohcWf8Q</a>   |

## Research Publications by Faculties regarding pedagogical methods/Techniques

- R. Raja Subramanian, C. Sivapragasam, “A Case Study on the Student Centric Course in Engineering Programme leveraging PBL”, Journal of Engineering Education Transformations, vol. 35, no. 1, pp. 27-41, 2021
- S Shashi Anand, A Francis Saviour Devaraj, R Kanniga Devi, C Bala Subramanian, R Raja Subramanian, P Nagaraj, “Effective design and implementation of B. Tech (CSE) curriculum with industry tie-ups”, Journal of Engineering Education Transformations, vol. 34, pp. 191-200, 2021
- N. C. Brintha, G. Ebenezer, A. Francis Saviour Devaraj, C. Sivapragasam, J. T. Winowlin Jappes, “Improving Student Outcome through Flexibility in Teaching and Evaluation Methods”, Journal of Engineering Education Transformations, vol. 34, Special issue, pp. 380-383, 2020
- M. Muthukannan, R. Kanniga Devi, S. Shasi Anand, S. Muthuvel, “A Comparative Study on Effectiveness of CO Attainment through Virtual Lab and Face-to-Face Mode for Practical Courses”, in the Proceedings of ICTIEE 2022, pp. 135-141, 2022