Minutes of the Board of studies in CSE & IT, Kakatiya University meeting held on 24/11/25 in online.

Members Attended:

S.No.	Name of the Teacher	Member	Signature
1.	Dr.T.Archana, Assistant Professor, Dept. of CSE.	BOS, Chairperson, CSE&IT	
2.	Prof.M.Sadanandam, Professor, Dept. of CSE, University College of Engineering, KU, Kothagudem	Member	
3.	Dr.N.Ramana, Associate Professor, Dept. of CSE, KU College of Engineering &Technology, KU, Warangal	Member	
4.	Dr.K.Kishor Kumar, Associate Professor Dept of CSE, University College of Engineering , KU, Kothagudem	Member	
5.	Smt. K.Sravanthi, Assistant Professor Dept. CSE, University College of Engineering, KU, Kothagudem	Member	
6.	Dr.K.Padmaja, Assistant Professor Dept. of CSE, University College of Engineering, KU, Kothagudem	Member	
7.	Dr. U.Venkanna, Associate Professor, Dept. of CSE, NIT, Warangal.	External Member	

1. Agenda Discussed
   a. B.Tech (Data Science), B.Tech(AI&ML) VIIIth Semester
      - Approval of Syllabus
2. Resolution:
   a. Approval of B.Tech (Data Science) VIIIth Semester Syllabus.
   b. Approval of B.Tech (AI & ML) VIIIth Semester Syllabus.

B.Tech
AI & ML
VIII
Semester
Syllabus

Faculty of Engineering & Technology
KAKATIYA UNIVERSITY, WARANGAL-506 009
Department of Computer Science &Engineering
Department of Information Technology

B. Tech. (AI & ML) VIII SEMESTER

S. No.	Course Code	Course Title	Scheme of Instruction			Lecture hrs/week	Scheme of Examination		Credits
			L	T	P	H	CIE	SEE	
1.	PE-V*	Professional Elective –V*	3	1	0	4	30	70	4
2.	PE-VI**	Professional Elective –VI**	3	1	0	4	30	70	4
3.	PCS-PW801DS	Project Work	0	0	6	6	50	100	3
4.	MC ***	Mandatory Non-Credit Course	2	0	0	2	30	--	0
		Total	**8**	**2**	**6**	**25**	**140**	**240**	11

***(PE-V)Professional Elective –V**

PE8501CS Cryptography and Network Security
PE8502CS Mobile Application Development
PE8503CS Web Security

****(PE-VI)Professional Elective –VI**

PE8601CS Deep Learning
PE8602CS Conversational AI
PE8603CS Quantum Computing

*****(HS-MC) Mandatory Non Credit Course**

MC-802aHS Yoga Practice
MC-802bHS NSS

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B. Tech. (AI & ML) VIII SEMESTER

Professional Elective –V

PE8501CS –CRYPTOGRAPHY AND NETWORK SECURITY

Teaching Scheme				Examination Scheme
L	T	P	C	Internal Marks :30
3	1	0	4	External Marks :70

UNIT I

Security Attacks: Interruption, Interception, Modification and Fabrication, Security Services: Confidentiality, Authentication, Integrity, Non-repudiation, Access Control and Security Mechanisms, A model for Network Security.

UNIT II

Conventional Encryption: Principles, Feistel Cipher Model, Conventional encryption algorithms (DES, RC4 and B1owfish, cipher block modes of operation, location of encryption devices, key distribution, Approaches of Message Authentication, Secure Hash Functions and HMAC.

UNIT III

Public key cryptography principles, Euclid's Algorithm, Fennat's and Euler's Theorem, public key cryptography algorithms, digital signatures, digital Certificates, Certificate Authority and key management: Kerberos, X.509 Directory Authentication Service.

UNIT IV

Email Security: Pretty Good Privacy (PGP) and S/MIME.
IP Security: Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security, Associations and Key Management

UNIT V

Web Security: Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET). Intruders, Viruses and related threats, Firewall Design Principles, Trusted Systems, Intrusion Detection Systems.

TEXT BOOKS:

1 Cryptography and Network Security by William Stallings 5th Edition, Pearson Education.
2 Information Security, Principles and Practice by Mark Stamp, Wiley India.

REFERENCE BOOKS:

1 Applied Cryptography by Bruce Schneier, 2007.
2 Cryptography and Data Security, Denning D, Addison Wesley,1982.
3 Cryptography and Network Security : Forouzan, Mukhopadhyay, MC Graw Hill, 2"" Edition.

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B. Tech. (AI & ML) VIII SEMESTER

Professional Elective –V

PE8502CS –MOBILE APPLICATION DEVELOPMENT

Teaching Scheme				Examination Scheme
L	T	P	C	Internal Marks :30
3	1	0	4	External Marks :70

UNIT I

Android Operating System: Android OS design and Features – Android development framework, SDK features, Installing and running applications on Eclipse platform, Creating AVDs, Types of Android applications, Best practices in Android programming, Android tools
Discussion on Android application components: Android Manifest file, Externalizing resources like values, themes, layouts, Menus etc, Resources for different devices and languages, Runtime Configuration Changes
What is Android Application Lifecycle: Activities, Activity lifecycle, activity states, monitoring state changes

UNIT II

How to Create Android User Interface: Measurements Device and pixel density independent Measuring units.
Layouts: Linear, Relative, Grid and Table Layouts.
Various components of User Interface (UI): Editable and non-editable Text Views, Buttons, Radio and Toggle Buttons, Checkboxes, Spinners, Dialog and pickers.
Event Handling: Handling clicks or changes of various UI components.
Fragments& Life cycle: Creating fragments, Lifecycle of fragments, Fragment states, Adding fragments to Activity, adding, removing and replacing fragments with fragment transactions, interfacing between fragments and Activities, Multi-screen Activities

UNIT III

Intents and Broadcasts: Intent – Using intents to launch Activities, Explicitly starting new Activity, Implicit Intents, Passing data to Intents, Getting results from Activities, Native Actions, using Intent to dial a number or to send SMS.
Broadcast Receivers and Notifications – Using Intent filters to service implicit Intents, Resolving Intent filters, finding and using Intents received within an Activity Notifications – Creating and Displaying notifications, Displaying Toasts

UNIT IV

Persistent Storage: Files, Saving state and Preferences– Using application specific folders and files, creating files, reading data from files, listing contents of a directory Shared Preferences – Creating shared preferences, saving and retrieving data using Shared Preference
Introducing Android Databases – Introduction to SQLite database, creating and opening a database, creating tables, inserting retrieving and deleting data, Registering Content Providers, Using content Providers (insert, delete, retrieve and update)

UNIT V

Advanced Topics: Alarms – Creating and using alarms.
Using Internet Resources – Connecting to internet resource, using download manager
Location Based Services – Finding Current Location and showing location on the Map, updating location.
Publishing Android Applications, Using Eclipse for Android Development, Using the Android Emulator

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TEXT BOOKS:

1 Professional Android 4 Application Development, Reto Meier, Wiley India, (Wrox) , 2012.
2 Android Application Development for Java Programmers, James C Sheusi, Cengage Learning, 2013.

REFERENCE BOOKS:

1 Beginning Android 4 Application Development, Wei-Meng Lee, Wiley India (Wrox), 2013.

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B. Tech. (AI & ML) VIII SEMESTER

Professional Elective –V

PE8503CS WEB SECURITY

Teaching Scheme				Examination Scheme
L	T	P	C	Internal Marks :30
3	1	0	4	External Marks :70

UNIT I

The Web Security, The Web Security Problem, Risk Analysis and Best Practices.
Cryptography and the Web: Cryptography and Web Security, Working Cryptographic Systems and Protocols, Legal Restrictions on Cryptography, Digital Identification

UNIT II

The Web's War on Your Privacy, Privacy-Protecting Techniques, Backups and Antitheft, Web Server Security, Physical Security for Servers, Host Security for Servers, Securing Web Applications.

UNIT III

Database Security: Recent Advances in Access Control, Access Control Models for XML, Database Issues in Trust Management and Trust Negotiation, Security in Data Warehouses and OLAP Systems.

UNIT IV

Security Re-engineering for Databases: Concepts and Techniques, Database Watermarking for Copyright Protection, Trustworthy Records Retention, Damage Quarantine and Recovery in Data Processing Systems, Hippocratic Databases: Current Capabilities and Future Trends.

UNIT V

Privacy in Database Publishing: A Bayesian Perspective, Privacy-enhanced Location-based Access Control, Efficiently Enforcing the Security and Privacy Policies in a Mobile Environment.

TEXT BOOKS:

1 Web Security, Privacy and Commerce Simson G Arfinkel, Gene Spafford, O'Reilly.
2 Handbook on Database security applications and trends Michael Gertz, Sushil Jajodia

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B. Tech. (AI & ML) VIII SEMESTER

Professional Elective –VI

PE8601CS DEEP LEARNING

Teaching Scheme				Examination Scheme
L	T	P	C	Internal Marks :30
3	1	0	4	External Marks :70

UNIT I

Introduction to Deep Learning, Historical Trends in Deep learning, Deep Feed - forward networks, Gradient-Based learning, Hidden Units, Architecture Design, Back-Propagation and Other Differentiation Algorithms

UNIT II

Regularization for Deep Learning: Parameter norm Penalties, Norm Penalties as Constrained Optimization, Regularization and Under-Constrained Problems, Dataset Augmentation, Noise Robustness, Semi-Supervised learning, Multi-task learning, Early Stopping, Parameter Typing and Parameter Sharing, Sparse Representations, Bagging and other Ensemble Methods, Dropout, Adversarial Training, Tangent Distance, tangent Prop and Manifold, Tangent Classifier

UNIT III

Optimization for Train Deep Models: Challenges in Neural Network Optimization, Basic Algorithms, Parameter Initialization Strategies, Algorithms with Adaptive Learning Rates, Approximate Second- Order Methods, Optimization Strategies and Meta-Algorithms Applications: Large-Scale Deep Learning, Computer Vision, Speech Recognition, Natural Language Processing.

UNIT IV

Convolution neural networks: The Convolution Operation, Motivation, Pooling, Convolution and Pooling as an Infinitely Strong Prior, Variants of the Basic Convolution Function, Structured Outputs, Data Types, Efficient Convolution Algorithms, Convolutional Networks and the History of Deep Learning.

UNIT V

Sequence Modeling- Recurrent and Recursive Nets: Unfolding computational Graphs, Recurrent Neural Networks, Bidirectional RNNs, Encoder-Decoder Sequence-to-Sequence Architectures, Deep Recurrent Networks, Recursive Neural Networks.

TEXT BOOKS:

1 Deep Learning: An MIT Press Book By Ian Goodfellow and Yoshua Bengio and Aaron Courville Neural Networks and Learning Machines, Simon Haykin, 3rd Edition, Pearson Prentice

REFERENCE BOOKS:

1 Fundamentals of Deep Learning: Designing Next-Generation Machine Intelligence Algorithm by Nithin Buduma , Nikhil Buduma Joe Papa O'Reilly Publication, Second Edition 2022.

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B. Tech. (AI & ML) VIII SEMESTER

Professional Elective –VI

PE8602CS CONVERSATIONAL AI

Teaching Scheme				Examination Scheme
L	T	P	C	Internal Marks :30
3	1	0	4	External Marks :70

UNIT I

Dialogue Systems: Introduction, why develop a dialogue system, History of dialogue systems, present-day dialogue systems, modelling conversational dialogue systems, designing and developing dialogue systems.

UNIT II

Rule-Based Dialogue Systems- Architecture, Methods, and Tools: Typical Dialogue Systems Architecture, designing a Dialogue System, Tools for Developing Dialogue Systems, Rule-Based Techniques in Dialogue Systems, Participating in the Alexa Prize.

UNIT III

Statistical Data-Driven Dialogue Systems: Motivating the Statistical Data-Driven Approach, Dialogue Components in the Statistical Data-Driven Approach, Natural Language Understanding, Dialogue Management, Natural Language Generation, Reinforcement Learning (RL), Representing Dialogue as a Markov Decision Process, From MDPs to POMDPs, Dialogue State Tracking, Dialogue Policy, Problems and Issues with Reinforcement Learning and POMDPs

UNIT IV

Evaluating Dialogue Systems: How to Conduct the Evaluation, Laboratory Studies vs. Evaluations in the Wild, Evaluating Task-Oriented Dialogue Systems, Evaluating Open-Domain Dialogue Systems, Evaluation Frameworks, Best Ways to Evaluate Dialogue Systems.

UNIT V

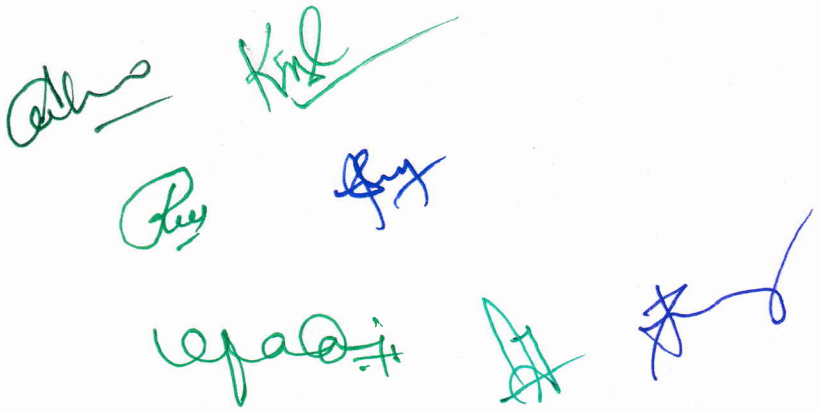
End-to-End Neural Dialogue Systems: Neural Network Approaches to Dialogue Modelling, A Neural Conversational Model, Introduction to the Technology of Neural Dialogue, Retrieval-Based Response Generation, Task-Oriented Neural Dialogue Systems, Open-Domain Neural Dialogue Systems, Some Issues and Current Solutions, Dialogue Systems: Datasets, Competitions, Tasks, and Challenges, Multimodality in Dialogue, Visual Dialogue and Visually Grounded Language.

TEXT BOOKS:

1 Conversational AI, Dialogue Systems, Conversational Agents and Chatbots by Michael McTear, Morgan and Claypool Publisher, 2020.

REFERENCE BOOKS:

1 Conversational Artificial Intelligence by Romil Rawat, Rajesh Kumar Chakrawarti, Sanjaya Kumar Sarangi, Piyush Vyas, Mary Sowjanya Alamanda, Kotagiri Srividya and Krishnan Sakthidasan Sankaran Scrivener Publications.
2 Cathy Pearl, "Designing Voice User Interfaces: Principles of Conversational Experiences", O'Reilly, 2016



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B. Tech. (AI & ML) VIII SEMESTER

Professional Elective –VI

PE8603CS QUANTUM COMPUTING

Teaching Scheme				Examination Scheme
L	T	P	C	Internal Marks :30
3	1	0	4	External Marks :70

UNIT I

Introduction to Essential Linear Algebra: Some Basic Algebra, Matrix Math, Vectors and Vector Spaces, Set Theory **Complex Numbers:** Definition of Complex Numbers, Algebra of Complex Numbers, Complex Numbers Graphically,Vector Representations of Complex Numbers, PauliMatrice, Transcendental Numbers.

UNIT II

Basic Physics for Quantum Computing: The Journey to Quantum, Quantum Physics Essentials, Basic Atomic Structure, Hilbert Spaces, Uncertainty, Quantum States, Entanglement.
Basic Quantum Theory: Further with Quantum Mechanics, Quantum Decoherence, Quantum Electrodynamics, Quantum Chromo dynamics, Feynman Diagram Quantum Entanglement and Quantum Key Distribution (QKD), Quantum Entanglement, Interpretation, Quantum Key Exchange(QKE).

UNIT III

Quantum Architecture: Further with Qubits, Quantum Gates, More with Gates, Quantum Circuits, The D-Wave Quantum Architecture. **Quantum Hardware:** Qubits, How Many Qubits Are Needed? Addressing Decoherence, Topological Quantum Computing, Quantum Essentials.

UNIT IV

Quantum Algorithms: What Is an Algorithm? Deutsch's Algorithm, Deutsch-Jozsa Algorithm, Bernstein- Vazirani Algorithm, Simon's Algorithm, Shor's Algorithm, Grover's Algorithm.

UNIT V

Current Asymmetric Algorithms: RSA, Diffie-Hellman.
The Impact of Quantum Computing on Cryptography: Asymmetric Cryptography, Specific Algorithms, Specific Applications.

TEXT BOOKS:

1 Dr. Chuck Easttom, Quantum Computing Fundamentals, Pearson
2 NielsenM.A.,QuantumComputationandQuantumInformation,CambridgeUniversityPress

REFERENCE BOOKS:

1. QuantumComputingforComputerScientistsbyNosonS.YanofskyandMircoA.Mannucci
2. BenentiG. Casati G. and Strini G.,Principles of Quantum Computation and Information, Vol. Basic Concepts. Vol. Basic Tools and Special Topics, World Scientific.
3. Pittenger A.O., An Introduction to Quantum Computing Algorithms.

Other Suggested Readings:

1. IBM Quantum Learning Courses: https://learning.quantum.ibm.com/.
2. YouTube Link: Introduction to Quantum Computing Complete Course - Quantum Soar.

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B. Tech. (AI & ML) VIII SEMESTER

Humanity Science Course

MC802aHS –YOGA PRACTICE

Teaching Scheme				Examination Scheme
L	T	P	C	Internal Marks :30
2	0	0	0	---

UNIT I

Introduction: Yoga definition, health definition from WHO, yoga versus health, basis of yoga, yoga is beyond science, Gist of eighteen chapters of Bhagavad-Gita, four types of yoga: Karma, Bhakti, Gnyana and Raja yoga, Internal and External yoga, elements of Ashtanga yoga (Yama, Niyama, Asana, Pranayama, Prathyahara, Dharana, Dhyana and Samadhi), Pancha koshas and their purification through Asana, Pranayama and Dhyana.

UNIT II

Suryanamaskaras (Sun Salutations): Definition of sun salutations, seven chakras (Mooladhaar, Swadhishtaan, Manipura, Anahata, Vishuddhi, Agnya and Sahasrar), various manthras (Om Mitraya, OmRavaye, Om Suryaya, Om Bhanave, Om Marichaye, Om Khagaye, Om Pushne, Om Hiranya Garbhaye, Om Adhityaya, Om Savitre, Om Arkhaya, and Om Bhaskaraya) and their meaning while performing sun salutations, physiology, seven systems of human anatomy, significance of performing sun salutations.

UNIT III

Asanas (Postures): Pathanjali's definition of asana, sthiram sukham asanam, 3rd limb of Ashtanga yoga, loosening or warming up exercises, sequence of perform in asanas (standing, sitting, prone, supine and inverted), nomenclature of asanas (animals, trees, rishis and so on), asanas versus chakras, asanas versus systems, asanas versus physical health, activation of Annamaya kosha.

UNIT IV

Pranayama (Breathing Techniques): Definition of Pranayama as per Shankaracharya, 4th limb of Ashtanga yoga, various techniques of breathing, Pranayama techniques versus seasons, bandhas and their significance in Pranayama, mudras and their significance in Pranayama, restrictions of applying bandhas with reference to health disorders, Pranayama versus concentration, pranayama

is the bridge between mind and body, pranayam versus mental health, activation of Pranamaya kosha through Pranayama.

UNIT V

Dhyana (Meditation): Definition of meditation, 7th limb of Ashtanga yoga, types of mind (Conscious and Sub-Conscious), various types of dhyana. Meditation versus spiritual health, Dharana and Dhyana, extention of Dhyana to Samadhi, Dhyana and mental stress, activation of Manomaya kosha through dhyana, silencing the mind.

SUGGESTED READINGS:

1. Light on Yoga by BKS lyengar.
2. Yoga Education for Children, Vol-1 by Swami Satyananda Saraswati.
3. Light on Pranayama by BKS lyengar.
4. Asana Pranayama Mudra and Bandha by Swami Satyananda Saraswati.
5. Hatha Yoga Pradipika by Swami Mukhtibodhananda.
6. Yoga education for children, Vol-11 by Swami Niranjanananda Saraswati.
7. Dynamics of Yoga by Swami Satyananda Saraswati.

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Humanity Science Course

MC802bHS –NSS

Teaching Scheme				Examination Scheme
L	T	P	C	Internal Marks :30
2	0	0	0	---

LIST OF ACTIVITIES

1. Orientation program about the role of NSS in societal development.
2. Swachh Bharat Program.
3. Guest lectures from eminent personalities on personality development.
4. Plantation of saplings/Haritha Haram Program.
5. Blood Donation / Blood Grouping Camp.
6. Imparting computer education to school children.
7. Creating Awareness among students on the importance of Digital transactions.
8. Stress management techniques.
9. Health Check-up Activities.
10. Observation of Important days like Voters' day, World Water Day and so on.
11. Road Safety Awareness Programs.
12. Energy Conservation Activities
13. Conducting Programs on effective communication skills.
14. Awareness programs on national integration.
15. Orientation on Improving Entrepreneurial Skills.
16. Developing Effective Leadership skills.
17. Job opportunity awareness programs in various defense, public sector undertakings.
18. Skill Development Program.
19. Creating awareness among students on the Importance of Yoga and other physical activities.
20. Creating awareness among students on various government sponsored social welfare schemes for the people.

Note: At least Ten Activities should be conducted in the Semester. Each event conducted under Swachh Bharat, Plantation and important days like Voters' day, world water day may be treated as a separate activity.