RAAK

COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)

From

03/08/2020

Mrs. C. Thangalatha Legaz
Assistant Professor/CSE
RAAK College of Engineering and Technology
Puducherry -110

To

The Principal
RAAK College of Engineering and Technology
Puducherry -110

Respected Sir,

Sub: Requisition for Approval to Conduct Skill Development program / Value added Course on **"20CSE01-Network Security"** - reg.

This is to bring to your kind notice that the Skill Development Team is planning to conduct a Program on "**20CSE01- Network Security**" for all the Final Year Computer Science and Engineering students from 09-08-2020 to 13-08-2020.

The main focus of this program is to provide a better exposure to our students on the Network Security for practical applications.

The syllabus and course plan structured are not listed in the Pondicherry University Curriculum and the same have been verified and approved by the Principal/HoD/Professors and Skill development team.

Hence, I kindly request you to approve event planned. The details and the necessary proofs are attached with this letter.

Thanking you,

Yours faithfully,

Thangalatha

Mrs. C. Thangalatha Legaz
AP/CSE

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

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RAAKCET/PRINCIPAL/CIR/AUG2020 **04/08/2020**

CIRCULAR

This is to inform that the Skill Development Team is planning to conduct a value added course on **"20CSE01- Network Security"** for all the Final Year Computer Science Engineering students from 09-08-2020 to 13-08-2020.Students are asked to utilize this opportunity and improve their skills.

PRINCIPAL

Circulation to:

1. All Students
2. All Faculty & Staff Members
3. All HoDs

Copy to:

1. All HoDs
2. Office

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
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DEPARTMENT OF COMPUTER SCINCE AND ENGINEERING PRESENTS

VALUE ADDED COURSE ON

NETWORK SECURITY

2020-2021

DATE: 09/08/2020 to 13/08/2020

VENUE: RAAKCET

TIME: 09 am to 04 pm

Resource Person:

Mr. K. Ramesh
Assistant Professor,
Sri Venkateshwara College of Engg & Tech.

For Registration Contact:

Mr. S. Sivachadiran, AP/ CSE.,
8654957522.

HOD

Mrs. Roselin Lourd

PRINCIPAL

Dr. S. Seenuvasamurthi

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
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VALUE ADDED COURSES
2020-2021
Department of Computer Science and Engineering
20CSE01- Network Security

Syllabus

Duration: 30 hours

Course Objective:

- To understand the number theory used for network security.
- To understand the design concept of cryptography and authentication.
- To understand the design concepts of internet security.
- To develop experiments on algorithm used for security.

Course Outcome:

Upon successful completion of the course students able to

- Explain basic functions of cryptography and classify the symmetric encryption techniques.
- Explain computational number theory and illustrate various Public key cryptographic techniques.
- Evaluate the authentication and has algorithms.
- Analyse various security models.
- Summarize the intrusion detection and It solutions to overcome the attacks.

Module 1: Conventional and Modern Encryption **(9 Hours)**

Model of network security – Security attacks, services and attacks – OSI security architecture – Classical encryption techniques – SDES – Block cipher Principles- DES – Strength of DES – Block cipher design principles – Block cipher mode of operation – Evaluation criteria for AES – RC4 - Differential and linear cryptanalysis – Placement of encryption function – traffic confidentiality.

Module 2: Public Key Encryption **(9 Hours)**

Number Theory– Prime number – Modular arithmetic – Euclid's algorithm - Fermet's and Euler's theorem – Primality– Chinese remainder theorem – Discrete logarithm–Public keycryptographyandRSA– Keydistribution–Keymanagement–DiffieHellman key exchange – Elliptic curve cryptography.

Module 3: Authentication(9 Hours)

Authentication requirement–Authenticationfunction–MAC–Hashfunction–Securityof hash function and MAC – SHA –MD5- HMAC – CMAC - Digital signature and authentication protocols – DSS.

Module 4: SecurityPractice **(9 Hours)**

Authentication applications –Kerberos–X.509Authenticationservices -E-mail security– IP security - Web security.

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Module 5: SystemSecurity **(9 Hours)**

Introduction to distributed ledgers -Intruder–Intrusion detection system–Virus and related threats–Counter measures–Firewalls design principles–Trusted systems – Practical implementation of cryptography and security.

Course Designed by **Approved by** **Principal**

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CO - ATTAINMENT MAPPING

Sl. No	Register Number	Student Name	CO1	CO2	CO3	CO4
1	17TD2001	ABDUL RAHMAN.H	✓	✓	✓	✓
2	17TD2002	DEVIKA.P	✓	✓	✓	✓
3	17TD2003	EGALAKSHMI.P	✓	✓	✓	✓
4	17TD2004	ESHWAR. R	✓	✓	✓	✓
5	17TD2006	HARINI .S	✓	✓	✓	✓
6	17TD2008	JAYABHARATHI .M	✓	✓	✓	✓
7	17TD2009	JAYADHARANI. V	✓	✓	✓	✓
8	17TD2010	KEERTHANA.C	✓	✓	✓	✓
9	17TD2011	KOWSAR BEGUM.A	✓	✓	✓	✓
10	17TD2012	NISHA ESWARI.M	✓	✓	✓	✓
11	17TD2013	PAVITHRA.S	✓	✓	✓	✓
12	17TD2015	PRIYADHARSHINI.S	✓	✓	✓	✓
13	17TD2016	RAGHUL.M	✓	✓	✓	✓
14	17TD2017	RANJANI.R	✓	✓	✓	✓
15	17TDL024	ALEX ZANDER.C	✓	✓	✓	✓

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VALUE ADDED COURSES
2020-2021

Department of Computer Science and Engineering

20CSE01- Network Security

COURSE PLAN

S.no	Date	Hours	Time	Topic	Faculty details
DAY -1					
1	09.08.20	1,2	9 AM -11 AM	Model of network security Security attacks, services and attacks OSI security architecture	Mr.K.Ramesh & Mr.S.Kalaivanan
2		3,4	11.15 AM – 1.15 PM	Classical encryption techniques SDES Block cipher Principles- DES Strength of DES	Mr.K.Ramesh
3		5.6	2 PM -4 PM	Block cipher design principles ,Block cipher mode of operation Evaluation criteria for AES RC4 Differential and linear cryptanalysis Placement of encryption function traffic confidentiality.	Mr.S.Kalaivanan
DAY 2					
4	10.08.20	7,8	9 AM -11 AM	Number Theory Prime number Modular arithmetic Euclid's algorithm Fermet's and Euler's theorem	Mr.K.Ramesh
5		9,10,	11.15 AM – 1.15 PM	Primarily Chinese remainder theorem Discrete logarithm Public key cryptography and RSA	Mr.S.Kalaivanan
6		11,12	2 PM -4 PM	Key distribution Key management Diffie Hellman key exchange Elliptic curve cryptography	Mr.K.Ramesh
DAY -3					
7	11.08.20	13,14	9 AM -11 AM	Authenticationrequirement– Authenticationfunction– MAC–Hashfunction	Mr.S.Kalaivanan
8		15,16	11.15 AM – 1.15 PM	Security of hash function and MAC – SHA –MD5- HMAC – CMAC	Mr.K.Ramesh

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9		17,18	2 PM -4 PM	Digital signature and authentication protocols – DSS.	Mr.S.Kalaivanan
DAY -4					
10	12.08.20	19,20	9 AM -11 AM	Authentication applications –Kerberos–X.	Mr.K.Ramesh
11		21,22	11.15 AM – 1.15 PM	509Authenticationservices -E-mail security IP security - Web security.	Mr.S.Kalaivanan
12		23,24	2 PM -4 PM	modifying sheet metal models	Mr.K.Ramesh
DAY -5					
13	13.08.20	25,26	9 AM -11 AM	Introduction to distributed ledgers-Intruder Intrusion detection system	Mr.S.Kalaivanan
14		27,28	11.15 AM – 1.15 PM	Virus and related threats Countermeasures–Firewalls design principles	Mr.K.Ramesh
15		29,30	2 PM -4 PM	Trusted systems Practical implementation of cryptography and security.	Mr.S.Kalaivanan
ASESSMENT EXAM WILL BE CONDUCTED AFTER ONE WEEK OF COURSE COMPLETION *					

BREAK TIME: 11.00 TO 11.15 AM **LUNCH BREAK: 1.15 PM TO 2.00 PM**

COURSE DESIGNED BY
Mrs. C. THANGALATHA LEGAZ

APPROVED BY
SKILL DEVELOPMENT

PRINCIPAL
Dr.S.SEENUVASAMURTHI

RAAK College of Engineering & Technology

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VALUE ADDED COURSES
2020-2021
Department of Computer Science and Engineering

EVENT REPORT

Name of the Course: 20CSE01- Network Security(Online Mode)

Name of the Instructors: Mr.K.Ramesh & Mr.S.Kalaivanan

Year/ Branch: IV/ CSE

Duration of Course: 30 Hours (09-08-2020 to 13-08-2020)

Assessment Date: 20.08.2020

Post Event Summary:

The course was inaugurated on 09-08-2020 at 9.30 A.M. by our respectable principal and sessions were continued as per the schedule. Students were enriched their knowledge by attending the course. Finally, the course concluded by vote of thanks.

On 20.08.2020 assessment was conducted and feedbacks were collected from all the participants.

CO - Attainment:

CO1: To understand the number theory used for network security.

CO2:To understand the design concept of cryptography and authentication.

CO3: To understand the design concepts of internet security.

CO4: To develop experiments on algorithm used for security.

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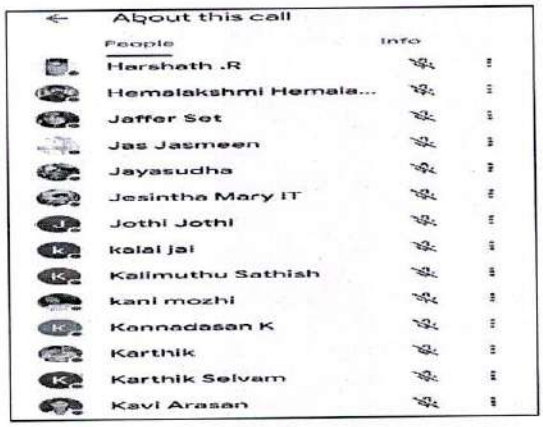
Value Added Course On Network Security 2020-21



Number Theory Prime number Modular arithmetic Euclid's algorithm Fermet's and Euler's theorem on 10.08.20

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From

03/08/2020

Mr. S. Sivachandiran

Assistant Professor/CSE

RAAK College of Engineering and Technology

Puducherry -110

To

The Principal

RAAK College of Engineering and Technology

Puducherry -110

Respected Sir,

Sub: Requisition for Approval to Conduct Skill Development program / Value added Course on **"20CSE02- Cybersecurity"** - reg.

This is to bring to your kind notice that the Skill Development Team is planning to conduct a Program on **"20CSE02- Cybersecurity"** for all the Third Year Computer and science Engineering students from 09-08-2020 to 13-08-2020.

The main focus of this program is to provide a better exposure to our students on cyber security for practical applications.

The syllabus and course plan structured are not listed in the Pondicherry University Curriculum and the same have been verified and approved by the Principal/HoD/Professors and Skill development team.

Hence, I kindly request you to approve event planned. The details and the necessary proofs are attached with this letter.

Thanking you,

Yours faithfully,

Sivachadrin .

Mr. S. Sivachandiran

AP/CSE

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RAAKCET/PRINCIPAL/CIR/AUG2020 **04/08/2020**

CIRCULAR

This is to inform that the Skill Development Team is planning to conduct a value added course on **"20CSE02- Cybersecurity"** for all the Third Year Computer science and Engineering students from 09-08-2020 to 13-08-2020.Students are asked to utilize this opportunity and improve their skills.

PRINCIPAL

Circulation to:

1. All Students
2. All Faculty & Staff Members
3. All HoDs

Copy to:

1. All HoDs
2. Office

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DEPARTMENT OF COMPUTER SCINCE AND ENGINEERING PRESENTS

VALUE ADDED COURSE ON CYBERSECURITY

2020-2021

DATE: 09/08/2020 to 13/08/2020

VENUE: RAAKCET

TIME: 09 am to 04 pm

Resource Person:

MR. S. Kalaivanan
Assistant Professor,
Mailam Engineering College.

For Registration Contact:

Mr. P. Gopinath, AP/ CSE.,
8976555441.

HOD

Mrs. Roselin Lourd

PRINCIPAL

Dr. S. Seenuvasamurthi
Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
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VALUE ADDED COURSES
2020-2021
Department of Computer science and Engineering
20CSE02- Cyber security
Syllabus

Duration: 30 hours

Course Objective:

- To understand the basics of Cyber security and Cyber crime.
- To understand the detailed functioning of Network and Security Concepts.
- To know attacks, defense and analysis technique.

Course Outcome:

Upon successful completion of the course students able to

- Analyze and evaluate the cyber security needs of an organization.
- Conduct a cyber security risk assessment.
- Measure the performance and troubleshoot cyber security systems.
- Implement cyber security solutions.
- Be able to use cyber security, information assurance, and cyber/computer forensics software/tools.

Module 1: Linear Algebra **(9 Hours)**

Scalars, Vectors, Matrices and Tensors, Matrix operations , types of matrices, Norms, Eigen decomposition, Singular Value Decomposition, Principal Components Analysis. Probability and Information Theory: Random Variables, Probability Distributions, Marginal Probability, Conditional Probability, Expectation, Variance and Covariance, Bayes'Rule, Information Theory. Numerical Computation: Overflow and Underflow.

Module 2 Machine Learning Basics **(9 Hours)**

Learning Algorithms, Capacity, Over fitting and Under fitting, Hyper parameters and Validation Sets, Estimators, Bias and Variance, Maximum Likelihood, Bayesian Statistics, Supervised and Unsupervised Learning, Stochastic Gradient Descent, Challenges Motivating Deep Learning. Deep Feed forward Networks

Module 3: RegularizationforDeep Learning **(9 Hours)**

Parameter NormPenalties,NormPenaltiesasConstrainedOptimization,Regularizationand Under-Constrained Problems, Dataset Augmentation, Noise Robustness, Semi-Supervised Learning, Multi-Task Learning, Early Stopping, Parameter Tying and Parameter Sharing, Sparse Representations, Bagging and Other Ensemble Methods, Dropout, Adversarial Training, Tangent Distance

Module 4: Convolutional Network **(9 Hours)**

The Convolution Operation, Pooling, Convolution, Basic Convolution Functions, Structured Outputs, DataTypes, Efficient Convolution Algorithms, Random or Unsupervised Features, Basis for Convolutional Networks.

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Module 5: Sequence Modelling **(9 Hours)**

Unfolding Computational Graphs, Recurrent Neural Networks, Bidirectional RNNs, Encoder-Decoder Sequence-to-Sequence Architectures, Deep Recurrent Networks, Recursive Neural Networks, Echo State Networks, LSTM, Gated RNNs, Optimization for Long-Term Dependencies, Auto encoders, Deep Generative Models.

Sivachadui.
Course Designed by

S. Luj.
Approved by

Principal

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18	18TD1416	MEHARIN BEGAM.M	✓	✓	✓	✓
19	18TD1417	PAVITHRA.K	✓	✓	✓	✓
20	18TD1418	PREETHA.R	✓	✓	✓	✓
21	18TD1419	PREMKUMAR M	✓	✓	✓	✓
22	18TD1420	PRIYADHARSHINI.P	✓	✓	✓	✓
23	18TD1421	PUSHPA.R	✓	✓	✓	✓
24	18TD1422	RIFATH ALMAS.S	✓	✓	✓	✓
25	18TD1423	SANDHIYA.E	✓	✓	✓	✓
26	18TD1424	SENBAGAM.B	✓	✓	✓	✓
27	18TD1425	SHANTHINI.A	✓	✓	✓	✓
28	18TD1426	SIVASAKTHI.C	✓	✓	✓	✓
29	18TD1427	SOORIYA MOORTHY.G.B.	✓	✓	✓	✓
30	18TD1428	SUGANYA.P	✓	✓	✓	✓
31	18TD1429	SUGUMARAN.M	✓	✓	✓	✓
32	18TD1430	SUMITHRA S	✓	✓	✓	✓
33	18TD1431	SUNITHA.C	✓	✓	✓	✓
34	18TD1432	VIJAY.V	✓	✓	✓	✓
35	18TD1433	VINODHINI.M	✓	✓	✓	✓
36	18TH1007	KAVIYA.K	✓	✓	✓	✓
37	18TH1011	MONISHA.M	✓	✓	✓	✓

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CO - ATTAINMENT MAPPING

Sl. No	Register Number	Student Name	CO1	CO2	CO3	CO4
1	18TB1203	DEVA.R	✓	✓	✓	✓
2	18TB1205	DINESH.T	✓	✓	✓	✓
3	18TD1401	ADARSH.S	✓	✓	✓	✓
4	18TD1402	ANITHA.I	✓	✓	✓	✓
5	18TD1403	ANITHA.R	✓	✓	✓	✓
6	18TD1404	ARTHI.K	✓	✓	✓	✓
7	18TD1405	DEEPA.S	✓	✓	✓	✓
8	18TD1406	FAVAZ AHAMED M	✓	✓	✓	✓
9	18TD1407	GNANADISHALI.P	✓	✓	✓	✓
10	18TD1408	GOPINATH.N	✓	✓	✓	✓
11	18TD1409	GUNA PRIYA.M	✓	✓	✓	✓
12	18TD1410	IMMANUEL PAUL.S	✓	✓	✓	✓
13	18TD1411	KEERTHIGA.K	✓	✓	✓	✓
14	18TD1412	KOWSALYA.M	✓	✓	✓	✓
15	18TD1413	MADHAVA KUMARAN.P	✓	✓	✓	✓
16	18TD1414	MADHU BALA.R	✓	✓	✓	✓
17	18TD1415	MANIKANDAN.P	✓	✓	✓	✓

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VALUE ADDED COURSES
2020-2021

Department of Computer science and Engineering

20CSE02- Cyber security
COURSE PLAN

S.no	Date	Hours	Time	Topic	Faculty details
DAY -1					
1	09.08.20	1,2	9AM -11AM	Scalars, Vectors, Matrices and Tensors, Matrix operations , types of matrices, Norms, Eigen decomposition, Singular Value Decomposition	Mr.S.Kalaivanan & Mr.P.Sathyanarayanan
2		3,4	11.15AM – 1.15 PM	Decomposition, Principal Components Analysis. ProbabilityandInformationTheory:RandomVariables,ProbabilityDistributions,Marginal	Mr.S.Kalaivanan
3		5,6	2 PM -4PM	, Expectation, Variance and Covariance, Bayes' Rule, Information Theory. Numerical Computation: Overflow and Underflow	Mr.P.Sathyanarayanan
DAY 2					
4	10.08.20	7,8	9AM -11AM	Learning Algorithms, Capacity, Overfitting and Underfitting, Hyperparameters and Validation Sets, Estimators	Mr.S.Kalaivanan
5		9,10,	11.15AM – 1.15 PM	Bias and Variance, Maximum Likelihood, Bayesian Statistics, Supervised and Unsupervised Learning, Stochastic Gradient Descent, Challenges	Mr.P.Sathyanarayanan
6		11,12	2 PM -4PM	Motivating Deep Learning. Deep Feedforward Networks	Mr.S.Kalaivanan
DAY -3					
7	11.08.20	13,14	9AM -11AM	ParameterNormPenalties,NormPenaltiesasConstrainedOptimization,Regularizationand Under-Constrained Problems, Dataset	Mr.P.Sathyanarayanan
8		15,16	11.15AM – 1.15 PM	, Noise Robustness, Semi-Supervised Learning, Multi-Task Learning, Early Stopping, Parameter Tying and Parameter Sharing	Mr.S.Kalaivanan
9		17,18	2 PM -4PM	Sparse Representations, Bagging and Other Ensemble Methods, Dropout, Adversarial Training, Tangent Distance	Mr.P.Sathyanarayanan
DAY -4					
10	12.08.20	19,20	9AM -11AM	TheConvolutionOperation,Pooling,Convolution,BasicConvolutionFunctions,	Mr.S.Kalaivanan
11		21,22	11.15AM – 1.15 PM	TheConvolutionOperation,Pooling,Convoluti	Mr.P.Sathyanarayanan

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				on,BasicConvolutionFunctions,Structured Outputs,DataTypes,EfficientConvolutionAlgorithms	
12		23,24	2 PM -4PM	RandomorUnsupervisedFeatures, Basis for Convolutional Networks.	Mr.S.Kalaivanan
DAY -5					
13	13.08.20	25,26	9AM -11AM	Unfolding Computational Graphs, Recurrent Neural Networks, Bidirectional RNNs, Encoder-Decoder	Mr.P.Sathyanarayanan
14		27,28	11.15AM – 1.15 PM	Sequence-to-Sequence Architectures, Deep Recurrent Networks, Recursive Neural Networks, Echo State Networks	Mr.S.Kalaivanan
15		29,30	2 PM -4PM	LSTM, Gated RNNs, Optimization for Long-Term Dependencies, Autoencoders, Deep Generative Models.	Mr.P.Sathyanarayanan
****ASESSMENT EXAM WILL BE CONDUCTED AFTER ONE WEEK OF COURSE COMPLETION *****					

BREAK TIME: 11.00 TO 11.15 AM **LUNCH BREAK: 1.15 PM TO 2.00 PM**

Sivachandi-
COURSE DESIGNED BY
Mr. S. SIVACHANDIRAN

APPROVED BY
SKILL DEVELOPMENT

PRINCIPAL
Dr.S.SEENUVASAMURTHI

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
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COLLEGE OF ENGINEERING AND TECHNOLOGY

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VALUE ADDED COURSES
2020-2021
Department of Computer Science and Engineering

EVENT REPORT

Name of the Course: 20CSE02- Cyber Security (Online Mode)

Name of the Instructors: Mr.S.Kalaivanan & Mr.P.Sathyanarayanan

Year/ Branch: III/ CSE

Duration of Course: 30 Hours (09-08-2020 to 13-08-2020)

Assessment Date: 20.08.2020

Post Event Summary:

The course was inaugurated on 09-08-2020 at 9.30 A.M. by our respectable principal and sessions were continued as per the schedule. Students were enriched their knowledge by attending the course. Finally, the course concluded by vote of thanks.

On 20.08.2020 assessment was conducted and feedbacks were collected from all the participants.

CO - Attainment:

CO1: Analyze and evaluate the cyber security needs of an organization.

CO2: Conduct a cyber security risk assessment.

CO3: Measure the performance and troubleshoot cyber security systems.

CO4: Implement cyber security solutions.

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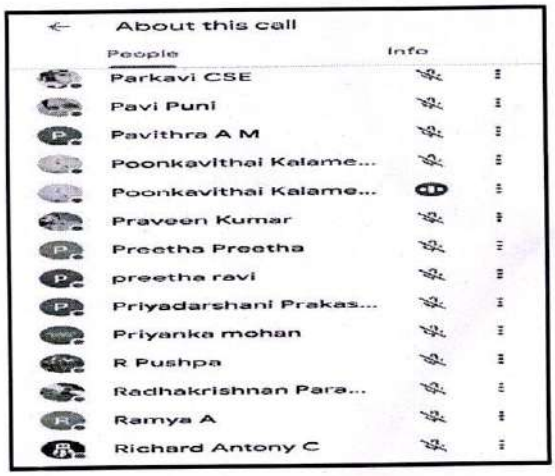
Value Added Course On Cyber security 2020-21



Supervised and Unsupervised Learning, Stochastic Gradient Descent on 10.08.20

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From

03/08/2020

Mr. M. Mohan Prasanna

Assistant Professor/CSE

RAAK College of Engineering and Technology

Puducherry -110

To

The Principal

RAAK College of Engineering and Technology

Puducherry -110

Respected Sir,

Sub: Requisition for Approval to Conduct Skill Development program / Value added Course on **"20CSE03- Deep Learning"** - reg.

This is to bring to your kind notice that the Skill Development Team is planning to conduct a Program on **"20CSE03- Deep Learning"** for all the Second Year Computer science and Engineering students from 09-08-2020 to 13-08-2020.

The main focus of this program is to provide a better exposure to our students on the deep learning for practical applications.

The syllabus and course plan structured are not listed in the Pondicherry University Curriculum and the same have been verified and approved by the Principal/HoD/Professors and Skill development team.

Hence, I kindly request you to approve event planned. The details and the necessary proofs are attached with this letter.

Thanking you,

Yours faithfully,

Mr. M. Mohan Prasanna

AP/CSE

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RAAKCET/PRINCIPAL/CIR/AUG2020 **04/08/2020**

CIRCULAR

This is to inform that the Skill Development Team is planning to conduct a value added course on **"20CSE03- Deep Learning"** for all the second Year Computer science and Engineering students from 09-08-2020 to 13-08-2020.Students are asked to utilize this opportunity and improve their skills.

PRINCIPAL

Circulation to:

1. All Students
2. All Faculty & Staff Members
3. All HoDs

Copy to:

1. All HoDs
2. Office

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DEPARTMENT OF COMPUTER SCINCE AND ENGINEERING
PRESENTS
VALUE ADDED COURSE ON
DEEP LEARNING

2020-2021

DATE: 09/08/2020 to 13/08/2020

VENUE: RAAKCET

TIME: 09 am to 04 pm

Resource Person:

MR. A. Sankaran
Assistant Professor,
Christ College of Engg & Tech.

For Registration Contact:

Ms. T. Geetha, AP/ CSE.,
9878586213.

HOD

Mrs. Roselin Lourd

RAAK College of Engineering & Technology

PRINCIPAL

Dr. S. Seenuvasamurthi

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VALUE ADDED COURSES

2020-2021

Department of Computer science and Engineering

20CSE03- Deep Learning

Syllabus

Duration: 30 hours

Course Objective:

- To understand the major technology trends driving Deep Learning.
- To be able to build, train and apply fully connected deep neural networks.
- To know how to implement efficient(vectorized) neural networks.
- To understand the key parameters and hyper parameters in a neural network's architecture.

Course Outcome:

- Understand the mathematical foundation of neural network.
- Describe the machine learning basics.
- Understand different architecture of deep neural network.
- Understand how to build a convolutional neural network.
- Understand how to build and train RNN and LSTMs

Module 1: LinearAlgebra **(9 Hours)**

Scalars, Vectors, Matrices and Tensors, Matrix operations, types of matrices, Norms, Eigen decomposition, Singular Value Decomposition, Principal Components Analysis.

Probability and Information Theory: Random Variables, Probability Distributions, Marginal Probability, Conditional Probability, Expectation, Variance and Covariance, Bayes' Rule, Information Theory.

Module 2: Machine Learning Basics **(9 Hours)**

Learning Algorithms, Capacity, Overfitting and Underfitting, Hyperparameters and Validation Sets, Estimators, Bias and Variance, Maximum Likelihood, Bayesian Statistics, Supervised and Unsupervised Learning, Stochastic Gradient Descent, Challenges Motivating Deep Learning

Module 3: Regularization for Deep Learning **(9 Hours)**

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 Tying and Parameter Sharing, Sparse Representations, Bagging and Other Ensemble Methods, Dropout, Adversarial Training, Tangent Distance,

Module 4: Convolutional Networks **(9 Hours)**

The Convolution Operation, Pooling, Convolution, Basic Convolution Functions, Structured Outputs, DataTypes, Efficient Convolution Algorithms, Random or Unsupervised Features, Basis for Convolutional Networks

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Module 5: Sequence Modeling: Re current and Recursive Nets (9 Hours)

Unfolding Computational Graphs, Recurrent Neural Networks, Bidirectional RNNs, Encoder-Decoder Sequence-to-Sequence Architectures, Deep Recurrent Networks, Recursive Neural Networks, Echo State Networks, LSTM, Gated RNNs, Optimization for Long-Term Dependencies, Auto encoders, Deep Generative Models.

Course Designed by **Approved by** **Principal**

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CO - ATTAINMENT MAPPING

Sl. No	Register Number	Student Name	CO1	CO2	CO3	CO4
1	19TD1501	ABARNA .V	✓	✓	✓	✓
2	19TD1502	ABDUL RAHMAN .MA	✓	✓	✓	✓
3	19TD1503	ABIRAMI .K	✓	✓	✓	✓
4	19TD1504	BALAJI .K	✓	✓	✓	✓
5	19TD1505	BHARATHKUMARAN .M	✓	✓	✓	✓
6	19TD1506	CHARUMATHY .K	✓	✓	✓	✓
7	19TD1507	DHAKSHAYINI .S	✓	✓	✓	✓
8	19TD1508	DHANUSHKODI. P	✓	✓	✓	✓
9	19TD1509	GOUTHAM .G	✓	✓	✓	✓
10	19TD1510	GOWTHAM .V	✓	✓	✓	✓
11	19TD1511	JEEVANDHAMANI .M	✓	✓	✓	✓
12	19TD1512	JOTHI .M	✓	✓	✓	✓
13	19TD1513	KARTHI .P	✓	✓	✓	✓
14	19TD1514	KAVIARASAN .K	✓	✓	✓	✓
15	19TD1515	KARMALAJAY	✓	✓	✓	✓
16	19TD1516	KESHOR .M	✓	✓	✓	✓
17	19TD1517	MALLIGA .B	✓	✓	✓	✓
18	19TD1518	MANIKANDAN.R	✓	✓	✓	✓

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19	19TD1519	MARZIA.M	✓	✓	✓	✓
20	19TD1520	MUKTHAR SHAKIR. K	✓	✓	✓	✓
21	19TD1521	NAMBIRAJU .P	✓	✓	✓	✓
22	19TD1522	NAVEENKUMAR .C	✓	✓	✓	✓
23	19TD1523	PAVITHRA .P	✓	✓	✓	✓
24	19TD1524	PRAISEN .B	✓	✓	✓	✓
25	19TD1525	PRAVEENKUMAR .A	✓	✓	✓	✓
26	19TD1526	PREETHA .K	✓	✓	✓	✓
27	19TD1527	RICHARD ANTONY .C	✓	✓	✓	✓
28	19TD1528	MONISHA. S	✓	✓	✓	✓
29	19TD1529	SABANA BANU. S	✓	✓	✓	✓
30	19TD1530	SAKTHIBALAN .V	✓	✓	✓	✓
31	19TD1531	SANDHIYA. A	✓	✓	✓	✓
32	19TD1532	SATHISHKUMAR .S	✓	✓	✓	✓
33	19TD1533	SENTHAMIZHAN .S	✓	✓	✓	✓
34	19TD1534	SHAMILI. B	✓	✓	✓	✓
35	19TD1535	SHIFANA FERVEEN .I	✓	✓	✓	✓
36	19TD1536	SHIYAMKUMAR .V	✓	✓	✓	✓
37	19TD1537	SOWMIYA .J	✓	✓	✓	✓
38	19TD1538	SUBASRI .S	✓	✓	✓	✓

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39	19TD1539	SWETHA .T	✓	✓	✓	✓
40	19TD1540	SYED VAHITH. V	✓	✓	✓	✓
41	19TD1541	VIJAY .N	✓	✓	✓	✓
42	19TD1542	VINODHINI .B	✓	✓	✓	✓
43	19TD1543	VINOTHBABU	✓	✓	✓	✓
44	19TD1544	YOGESH .V	✓	✓	✓	✓
45	19TD1545	YOVEL MISONRAJ .D	✓	✓	✓	✓
46	19TDL011	JAFFERSET.S	✓	✓	✓	✓

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VALUE ADDED COURSES
2020-2021
Department of Computer science and Engineering
20CSE03- Deep Learning

COURSE PLAN

S.no	Date	Hours	Time	Topic	Faculty details
DAY -1					
1	09.08.20	1,2	9AM -11AM	Scalars, Vectors, Matrices and Tensors, Matrix operations, types of matrices, Norms, Eigen decomposition,	Mr.P.Sathyanarayanan & Mr. A. Sankaran
2		3,4	11.15AM – 1.15 PM	Singular Value Decomposition Principal Components Analysis. Probability and Information Theory: Random Variables, Probability Distributions	Mr.P.Sathyanarayanan
3		5,6	2 PM -4PM	Marginal Probability, Conditional Probability, Expectation, Variance and Covariance, Bayes' Rule, Information Theory.	Mr. A. Sankaran
DAY 2					
4	10.08.20	7,8	9AM -11AM	Learning Algorithms, Capacity, Over fitting and Under fitting, Hyper parameters and Validation Sets	Mr.P.Sathyanarayanan
5		9,10,	11.15AM – 1.15 PM	Estimators, Bias and Variance, Maximum Likelihood, Bayesian Statistics, Supervised	Mr. A. Sankaran
6		11,12	2 PM -4PM	Unsupervised Learning, Stochastic Gradient Descent, Challenges Motivating Deep Learning	Mr.P.Sathyanarayanan

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14		27,28	11.15AM – 1.15 PM	, Deep Recurrent Networks, Recursive Neural Networks, Echo State Networks, LSTM,	Mr.P.Sathyanarayanan
15		29,30	2 PM -4PM	Gated RNNs, Optimization for Long-Term Dependencies, Auto encoders, Deep Generative Models.	Mr. A. Sankaran
ASESSMENT EXAM WILL BE CONDUCTED AFTER ONE WEEK OF COURSE COMPLETION *					

BREAK TIME: 11.00 TO 11.15 AM **LUNCH BREAK: 1.15 PM TO 2.00 PM**

COURSE DESIGNED BY
Mr. M. MOHAN PRASANNA

APPROVED BY
SKILL DEVELOPMENT TEAM

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VALUE ADDED COURSES
2020-2021
Department of Computer science and Engineering

EVENT REPORT

Name of the Course: 20CSE03- Deep Learning(Online Mode)

Name of the Instructors: Mr.P.Sathyanarayanan & Mr. A. Sankaran

Year/ Branch: II/ CSE

Duration of Course: 30 Hours (09-08-2020 to 13-08-2020)

Assessment Date: 20.08.2020

Post Event Summary:

The course was inaugurated on 09-08-2020 at 9.30 A.M. by our respectable principal and sessions were continued as per the schedule. Students were enriched their knowledge by attending the course. Finally, the course concluded by vote of thanks.

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CO1: Understand the mathematical foundation of neural network.

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CO3: Understand different architecture of deep neural network.

CO4: Understand how to build a convolution neural network.

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Value Added Course On Deep Learning 2020-21

Maximum Likelihood, Bayesian Statistics on 10.08.20

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