GO LEARNERZ

Where Learnerz Meets progress

KTU BTECH ONLINE CLASSES

KTU CRASH COURSES| KTU MOCK TEST | KTU PREVIOUS YEAR QUESTION PAPER SOLVED

www.golearnerz.com

SEMESTER S6

NETWORK SECURITY LAB

Course Code	**PCITL607**	**CIE Marks**	50
Teaching Hours/Week (L: T:P: R)	0:0:3:0	**ESE Marks**	50
Credits	2	**Exam Hours**	2 Hrs. 30 Min.
Prerequisites (if any)	PCITT402: Computer Networks	**Course Type**	Lab

Course Objectives:

1. To understand and implement modern symmetric key algorithms and public key infrastructure in network security.
2. To explore and apply digital signatures and cryptographic hash functions in secure communication.
3. To study and implement intrusion detection and prevention systems for securing networks.
4. To configure and test firewalls, network security protocols, and cryptographic protocols.

Experiment No.	Experiments
1	Implementation of AES and DES algorithms for data encryption and decryption.
2	Setting up and configuring a public key infrastructure (PKI) for secure communication.
3	Key management using RSA algorithm and certificate generation in a simulated environment.
4	Implementation of digital signatures using RSA and DSA algorithms.
5	Application of cryptographic hash functions (SHA-256, MD5) for data integrity verification.
6	Secure message transmission using digital signatures and hash functions.
7	Configuration and deployment of Snort as an Intrusion Detection System (IDS).
8	Implementation of an Intrusion Prevention System (IPS) using open-source tools.

9	Analysis of network traffic and identification of malicious activities using IDS/IPS.
10	Configuration of a network firewall using iptables/pfSense.
11	Implementation of VPN protocols (IPSec, SSL/TLS) for secure communication.
12	Testing and validation of cryptographic protocols (SSL/TLS) in securing web transactions.

Course Assessment Method
(CIE: 50 marks, ESE: 50 marks)

Continuous Internal Evaluation Marks (CIE):

Attendance	Preparation/Pre-Lab Work experiments, Viva and Timely completion of Lab Reports / Record (Continuous Assessment)	Internal Examination	Total
5	**25**	**20**	**50**

End Semester Examination Marks (ESE):

Procedure/ Preparatory work/Design/ Algorithm	Conduct of experiment/ Execution of work/ troubleshooting/ Programming	Result with valid inference/ Quality of Output	Viva voce	Record	Total
10	**15**	**10**	**10**	**5**	**50**

- ***Submission of Record:*** *Students shall be allowed for the end semester examination only upon submitting the duly certified record.*
- ***Endorsement by External Examiner:*** *The external examiner shall endorse the record*

Course Outcomes (COs)

At the end of the course students should be able to:

Course Outcome		Bloom's Knowledge Level (KL)
CO1	Implement modern symmetric key algorithms and configure public key infrastructure to secure data transmission.	**K3**
CO2	Use digital signatures and cryptographic hash functions for secure communication and data integrity.	**K3**
CO3	Apply and evaluate intrusion detection and prevention systems to protect network infrastructures.	**K3**
CO4	Configure and test firewalls and network security protocols to safeguard networks.	**K3**

Note*: K1- Remember, K2- Understand, K3- Apply, K4- Analyse, K5- Evaluate, K6- Create*

CO-PO Mapping Table (Mapping of Course Outcomes to Program Outcomes)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2	-	-	1	1	-	-	2
CO2	3	3	3	2	2	-	-	1	1	-	-	2
CO3	3	3	3	3	2	-	-	-	2	-	-	3
CO4	3	3	3	3	2	-	-	-	2	1	-	3

Note: *1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), -: No Correlation*

Text Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	Cryptography and Network Security: Principles and Practice	William Stallings	Pearson Education Press	7th Edition, 2017

Reference Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	Applied Cryptography: Protocols, Algorithms, and Source Code in C	Bruce Schneier	Wiley	20th Anniversary Edition, 2015
2	Network Security Essentials: Applications and Standards	William Stallings	Pearson Education	6th Edition, 2017

3	Network Security with OpenSSL	John Viega, Matt Messier, Pravir Chandra	O'Reilly Media	1st Edition, 2002
4	Firewalls and Internet Security: Repelling the Wily Hacker	William R. Cheswick, Steven M. Bellovin, Aviel D. Rubin	Addison-Wesley	2nd Edition, 2003

Video Links (NPTEL, SWAYAM…)	
Link No.	**Link ID**
1	https://www.youtube.com/watch?v=ZD71JeX4VkI
2	https://www.youtube.com/watch?v=3QnD2c4Xovk
3	https://www.youtube.com/watch?v=jvf4eCW1XI4
4	https://www.youtube.com/watch?v=8yKpQSHpYP0

Continuous Assessment (25 Marks):

1. **Preparation and Pre-Lab Work (7 Marks)**
   - Pre-Lab Assignments: Assessment of pre-lab assignments or quizzes that test understanding of the upcoming experiment.
   - Understanding of Theory: Evaluation based on students' preparation and understanding of the theoretical background related to the experiments.
2. **Conduct of Experiments (7 Marks)**
   - Procedure and Execution: Adherence to correct procedures, accurate execution of experiments, and following safety protocols.
   - Skill Proficiency: Proficiency in handling equipment, accuracy in observations, and troubleshooting skills during the experiments.
   - Teamwork: Collaboration and participation in group experiments.
3. **Lab Reports and Record Keeping (6 Marks)**
   - Quality of Reports: Clarity, completeness, and accuracy of lab reports. Proper documentation of experiments, data analysis and conclusions.
   - Timely Submission: Adhering to deadlines for submitting lab reports/rough record and maintaining a well-organized fair record.

4. **Viva Voce (5 Marks)**
    - Oral Examination: Ability to explain the experiment, results, and underlying principles during a viva voce session.

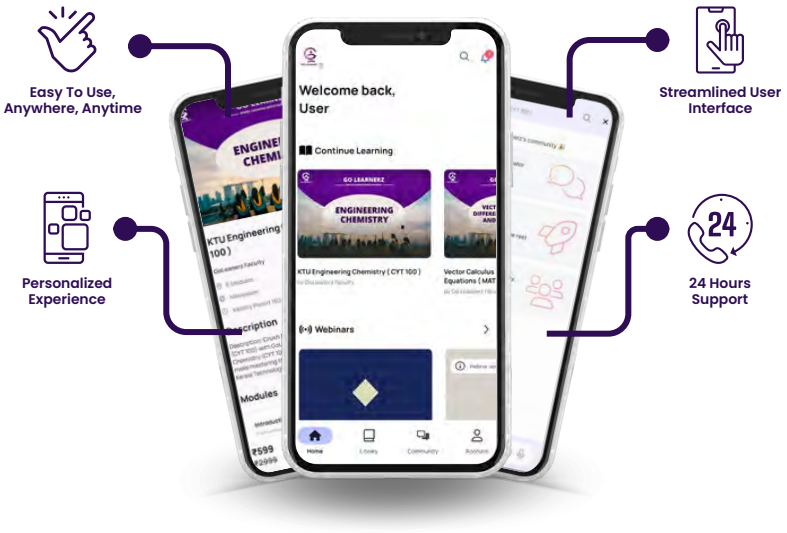
Final Marks Averaging: *The final marks for preparation, conduct of experiments, viva, and record are the average of all the specified experiments in the syllabus.*

Evaluation Pattern for End Semester Examination (50 Marks):

1. **Procedure/Preliminary Work/Design/Algorithm (10 Marks)**
    - Procedure Understanding and Description: Clarity in explaining the procedure and understanding each step involved.
    - Preliminary Work and Planning: Thoroughness in planning and organizing materials/equipment.
    - Algorithm Development: Correctness and efficiency of the algorithm related to the experiment.
    - Creativity and logic in algorithm or experimental design.

2. **Conduct of Experiment/Execution of Work/Programming (15 Marks)**
    - Setup and Execution: Proper setup and accurate execution of the experiment or programming task.
3. **Result with Valid Inference/Quality of Output (10 Marks)**
    - Accuracy of Results: Precision and correctness of the obtained results.
    - Analysis and Interpretation: Validity of inferences drawn from the experiment or quality of program output.
4. **Viva Voce (10 Marks)**
    - Ability to explain the experiment, procedure results and answer related question.
    - Proficiency in answering questions related to theoretical and practical aspects of the subject.
5. **Record (5 Marks)**
    - Completeness, clarity, and accuracy of the lab record submitted

WHERE LEARNERS MEETS PROGRESS



ELEVATE YOUR EXPERIENCE

GET OUR APP NOW

GET IT ON Google Play

Why Choose Us?

- Top Faculties and Mentor Support
- Free Webinars on Exam preparation
- Subject wise community for discussion and doubt solving
- Well Formatted Recorded classes
- Solved Previous Year Questions With Detailed Video
- Subject Wise Materials

Contact Us

+918089464002

www.golearnerz.com

golearnerz