	Week 15	Final Term Week

| 11 | S/W Requirements | The following software's and hardware's are needed to conduct this lab course:
i. Routers
ii. Switches
iii. Hubs
iv. Access Points
v. Wireless Routers
vi. Unshielded Twisted Pair (UTP) Cable
vii. Shielded Twisted Pair (STP) Cable
viii. Coaxial Cable
ix. Fiber Optic Cable
x. Cable Installation Guides
xi. Wireless LANs
xii. Unshielded Twisted Pair (UTP) Cable
xiii. Unshielded Twisted Pair Connector
xiv. Coaxial Cable Connectors
xv. Crimping tools
xvi. Cable Tester
xvii. Connectors
xviii. CISCO Packet Tracer
xix. Personal Computers
xx. Servers |
| 12 | Experiment No.: 01 | **Experiment No. 01:**
Name of the Experiment: Network Cabling- Making connections with Cat5.

Learning Objectives:
• List common cable types used in networking
• Describe how UTP cables are made
• Explain how UTP cables are used in Ethernet networks
• Demonstrate the ability to make a working patch cable
• Name the two wiring standards used for wired Ethernet networks and their uses

Course Outcomes (COs), Program Outcomes (POs) and Assessment: |

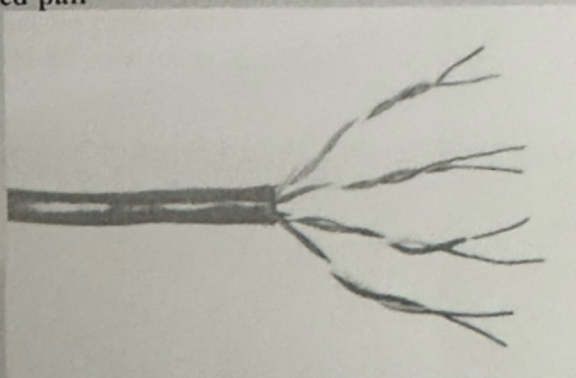| CO Statement	Corresponding PO	Domain / level of learning taxonomy	Delivery methods and activities	Assessment tools
CO1: **Demonstrate** details and functionality of layered network architecture and principles of computer networking, network design and	Cognitive / Understanding(PO5)	**Cognitive / Understanding**	☑ Simulation ☑ Experiment ☑ Practice lab ☐ Group discussion ☑ Tutorial	☑ Lab tests ☑ Lab reports ☑ Final lab test ☐ Open ended lab ☐ Project show & project presentation

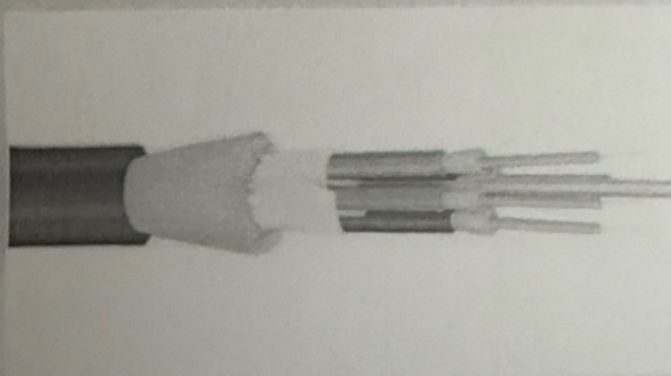| troubleshooting topics and introduction to required modern hardware and software.				

Procedure:
Common network cable types:

- **Coaxial cable**

- **Unshielded twisted pair**

- **Fiber optic**

UTP categories:

Category 1	Voice only (Telephone)
Category 2	Data to 4 Mbps (Localtalk)
Category 3	Data to 10Mbps (Ethernet)
Category 4	Data to 20Mbps (Token ring)
Category 5 Category 5e	Data to 100Mbps (Fast Ethernet) Data to 1000Mbps (Gigabit Ethernet)
Category 6	Data to 2500Mbps (Gigabit Ethernet)

Cat5e cable:
- 1000Mbps data capacity
- For runs of up to 90 meters
- Solid core cable ideal for structural installations (PVC or Plenum)
- Stranded cable ideal for patch cables
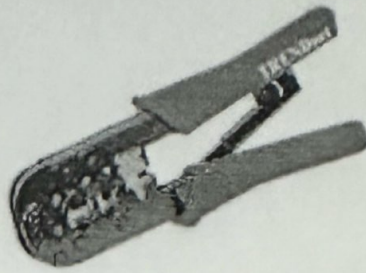- Terminated with RJ-45 connectors

RJ45 connector:

Making connections – Tools:
- Cat5e cable
- RJ45 connectors
- Cable stripper
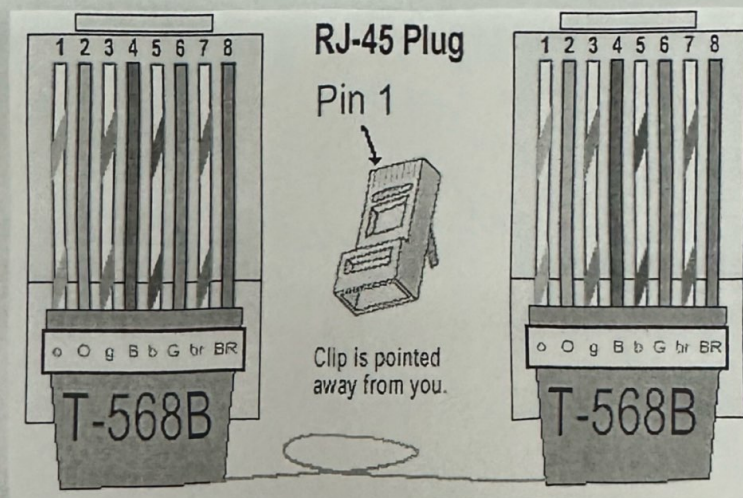- Scissors
- Crimping tool

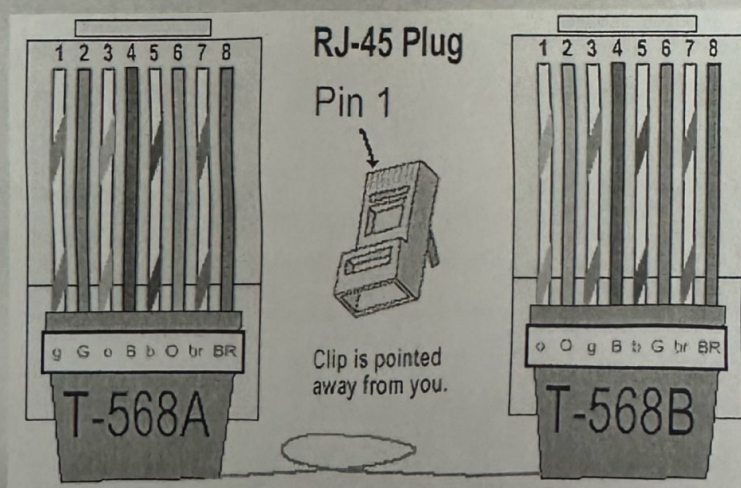Prepared by: Checked by: Approved by:

Ethernet Cable Colour – Code Standards & Methods of Crimping:

1. **Straight-Through Ethernet Cable:**

RJ-45 Plug
Pin 1

Clip is pointed away from you.

T-568B   T-568B

2. **RJ-45 Crossover Ethernet Cable:**

RJ-45 Plug
Pin 1
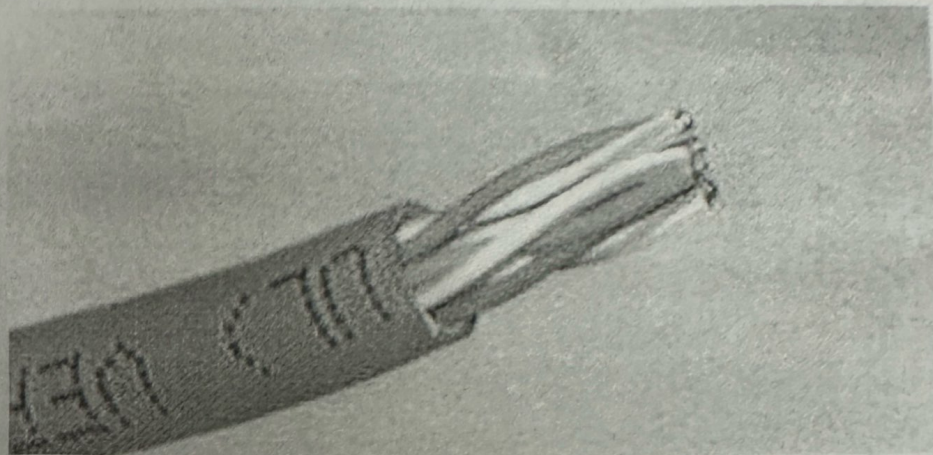
Clip is pointed away from you.

T-568A   T-568B

Making connections – Steps:
1. Strip cable end
2. Untwist wire ends
3. Arrange wires

4. Trim wires to size
5. Attach connector
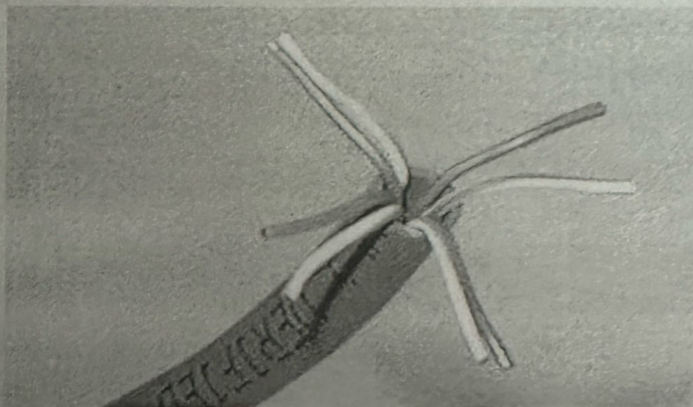6. Check
7. Crimp
8. Test

Step 1 – Strip cable end:
- Strip 1 – 1½" of insulating sheath
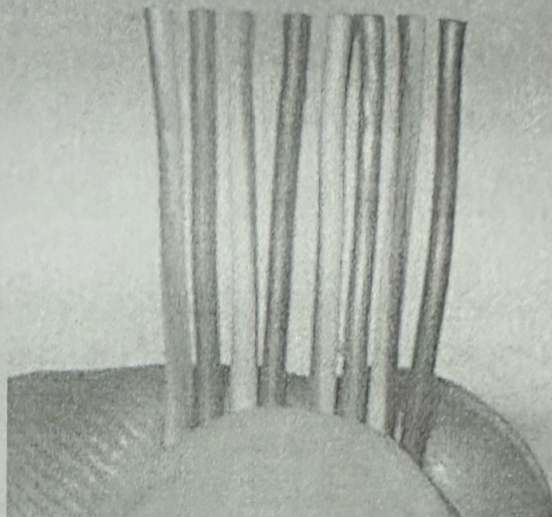- Avoid cutting into conductor insulation

Step 2 – Untwist wire ends:
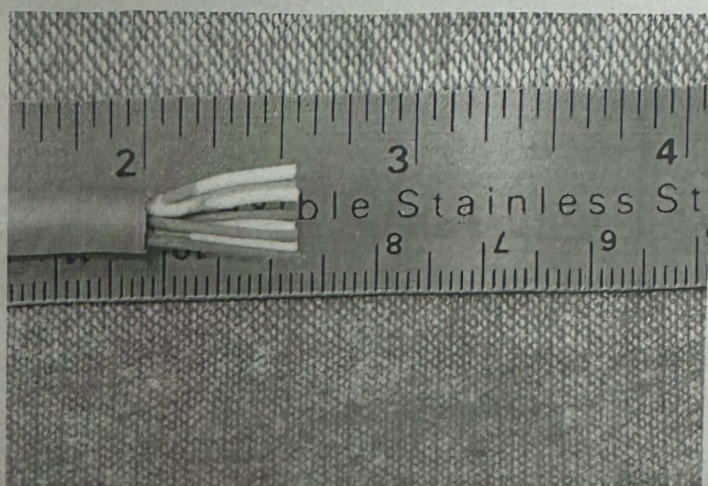- Sort wires by insulation colors

Step 3 – Arrange wires:
- TIA/EIA 568A: GW-G OW-Bl BlW-O BrW-Br
- TIA/EIA 568B: OW-O GW-Bl BlW-G BrW-Br

Step 4 – Trim wires to size:
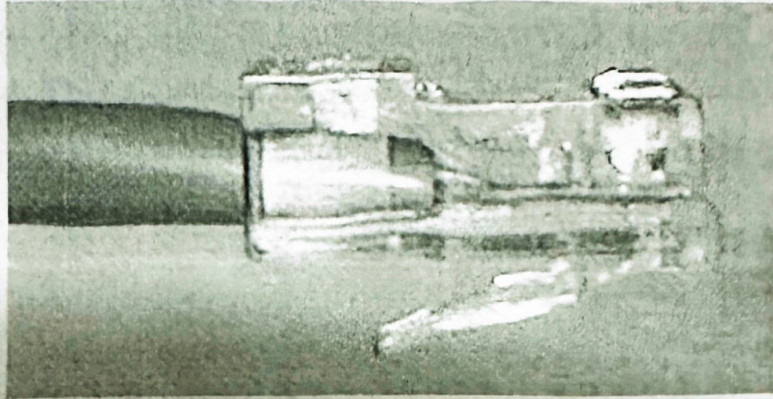- Trim all wires evenly
- Leave about ½" of wires exposed

Step 5 – Attach connector:
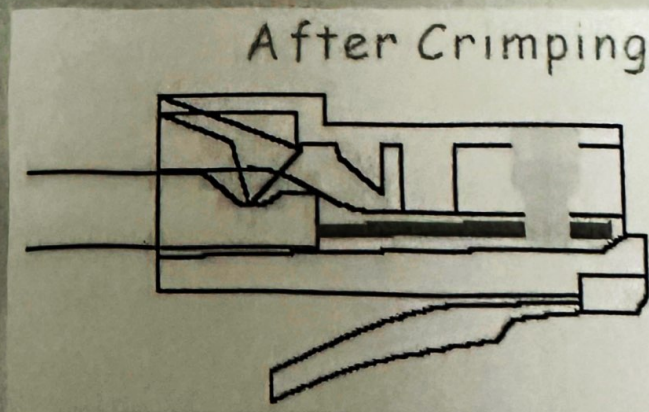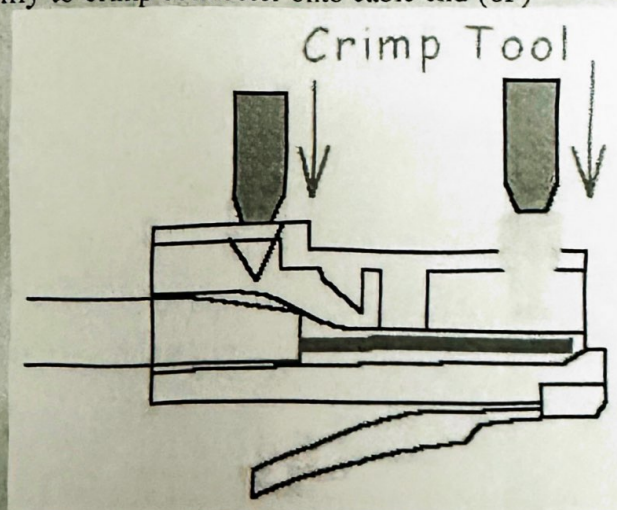- Maintain wire order, left-to-right, with RJ45 tab facing downward

Step 6 – Check:
- Do all wires extend to end?
- Is sheath well inside connector?

Step 7 – Crimp:
- Squeeze firmly to crimp connecter onto cable end (8P)

Crimp Tool

After Crimping

Step 8 – Test:
- Does the cable work?