The TCP header is 20 bytes long. It includes the following fields:

- Source Port (0-2 bytes)
- Destination Port (2-4 bytes)
- Sequence Number (4-6 bytes)
- Acknowledgment Number (6-8 bytes)
- Offset (8-10 bytes), which indicates the number of 32-bit words in the TCP header
- Flags (10-12 bytes), which include:
  - C: Congestion Window Reduced (CWR)
  - E: ECN Echo (ECE)
  - U: Urgent
  - A: Ack
  - P: Push
  - R: Reset
  - S: Syn
  - F: Fin

- Window (12-14 bytes)
- Checksum (14-16 bytes)
- Urgent Pointer (16-18 bytes)
- TCP Options (variable length, optional)

The TCP options include:

- End of Options List (0)
- No Operation (NOP, Pad) (1)
- Maximum segment size (2)
- Window Scale (3)
- Selective ACK ok (4)
- Timestamp (8)

The Checksum field is the checksum of the entire TCP segment and pseudo header (parts of the IP header). It is a 16-bit value.

The Offset field indicates the number of 32-bit words in the TCP header, minimum value of 5. Multiply by 4 to get byte count.

ECN (Explicit Congestion Notification). See RFC 3168 for full details, valid states below:

- Packet State
  - Syn: 0 0 1 1
  - Syn-Ack: 0 0 0 1
  - Ack: 0 1 0 0
  - No Congestion: 0 1 0 0
  - No Congestion: 1 0 0 0
  - Congestion: 1 1 0 0
  - Receiver Response: 1 1 0 1
  - Sender Response: 1 1 1 1

Please refer to RFC 793 for the complete Transmission Control Protocol (TCP) Specification.