

<b>EECP 3180</b>	<b>Computer Networks</b>		<b>3 Credit Hours</b>
<b>Prerequisites:</b>	<b>NONE</b>	<b>Co requisites</b>	<b>EECP 3171</b>
<b>Goal</b>	To introduce students to the underlying principles in computer networks and design network architectures with reasonable effort. To prepare students to undertake an in-depth study of local area networks and wide area networks dealing with their access mechanisms, routing algorithms, performance evaluation methodologies, and related issues. To acquaint students the experience in the design and analysis of network protocols through experiments on an Ethernet LAN or through simulation models.		
<b>Objectives</b>		<b>Outcomes</b>	
<p>This course should enable the student to:</p> <ol style="list-style-type: none"> <li>1. Understand the characteristics and applications of various networking technologies.</li> <li>2. Understand the physical and architectural elements and information layers of a communication network, along with diagnostic, design, operational, and performance measurement tools that are used to implement, operate, and tune such a network</li> <li>3. Have a working knowledge of at least one protocol at each of the main levels of the OSI seven layer reference models.</li> <li>4. Understand how features such as flow control and quality of service are achieved.</li> <li>5. Carry out network designs using appropriate hardware and software components to provide specified services for a given site.</li> <li>6. Specify the implementation of a simple protocol.</li> </ol>		<p>A student who satisfactory complete the course should be able to:</p> <ol style="list-style-type: none"> <li>1. Connect two computers together via their serial ports and write a communication (C/UNIX) program to send small messages back and forth between the machines.</li> <li>2. Configure a network analyzer to properly view frames traversing a Local Area Network (LAN).</li> <li>3. Document frame interaction between stations for a variety of station activities.</li> <li>4. Decode some basic frame types.</li> <li>5. Distinguish network addressing for broadcast, multicast and unicast conversations.</li> <li>6. Configure a basic bridged network with two network segments separated by a bridge.</li> <li>7. Utilize network analyzers to observe frames on each side of the bridge.</li> <li>8. Determine bridge operation by observing network traffic on each side of the bridge (i.e. determine the algorithm used by the bridge from the observation of he incoming and outgoing frames, etc.).</li> <li>9. Utilize a network management station to monitor and control agents in a test network and Report on results.</li> <li>10. Detail the design of a thin server, fat client, client-server system for 1 server and 50 clients. Include considerations such as protocols, encryption, directory services, and recover from failure, and reliability.</li> <li>11. Carry out a simulation of the designed thin server and comment on its strengths and weaknesses.</li> <li>12. Provide a report that support that justifies the choices of the design made.</li> </ol>	

