Nashville State Community College
Computer and Engineering Technologies Division
Electrical Engineering Technology

Master Course Syllabus

EETH 2250 Fiber Optics & Cabling
3 Credit Hours
3 Class Hours
An introduction to optical fiber as another medium in which information can be transmitted, received, multiplexed, demultiplexed and distributed. Topics include light sources, detectors, splices and connectors, couplers, fiber-optic systems and installation and types of fiber-optic equipment. Horizontal and vertical cabling techniques (facilities, cable ways) are taught to BICSI and EIA/TIA standards.
Prerequisite: EETH 1210.

Instructor Information:
Name:
Email:
Office Phone:
Office Location:
Office Hours:

Textbook and Other Materials:
Textbook: Introduction to Fiber Optics, by John Crisp, ISBN # 0750667567, NSCC laboratory packet provided

Supplies:

Course Outcomes:
Upon successful completion of this course, students should be able to:
- Students to be proficient in understanding basic optical terms and concepts.
- Evaluate students’ understanding of the characteristics as well as the operations of both LEDs and LASER diodes.
- Performance tests on students’ understanding fiber and copper as a medium of communication.
- Be proficient in cable and fiber preparation, connectorization, fusion, splicing and terminating to required standard.
Course Competencies:
The following are detailed course competencies intended to support the course outcomes

- Studying fiber optics characteristics; fiber optics as a medium of communication.
- Its advantages over coaxial cable.
- Units of measurements dB, dBm
- Test Equipment: Power meter, OTDR
- Types of cables
- Couplers, LEDs, LASERS

Course Assessments:
The following performance assessments will be used to demonstrate students’ understanding, knowledge and skills:
Performance assessment of students will be based on quizzes, homework, and final exam will be administered to determine student’s proficiency in understanding the materials.

Grading Policy
This course deals more on “hands on,” therefore; regular class attendance is a must. For that reason, class attendance is 15% of the final grade.

<table>
<thead>
<tr>
<th>Attendance</th>
<th>15%</th>
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<tbody>
<tr>
<td>Quiz/Homework/Project</td>
<td>60%</td>
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<tr>
<td>Term Paper</td>
<td>15%</td>
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<td>Presentation</td>
<td>10%</td>
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Grading Scale:
A (90-100%), B (80-89%), C (70-79%), D (60-69%), F (less than 60%)

Topics to Be Covered:

<table>
<thead>
<tr>
<th>Week</th>
<th>Chapter</th>
<th>Lecture/topic</th>
<th>Assigned exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1&amp;2</td>
<td>Optic fiber and light. What makes the light stay in the fiber</td>
<td>P8, # 1-5 ; p16,# 1-5</td>
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<tr>
<td>2</td>
<td>3&amp;4</td>
<td>The choice of frequency. Propagation of light along the fiber. Fiber optics as</td>
<td>P21,#1-5; p37, #1-5</td>
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<td>a communication medium; its advantages.</td>
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<tr>
<td>3</td>
<td>5&amp;6</td>
<td>Units of measurements. Decibels (dB), dBm; losses in optic fiber</td>
<td>P37,#1-5; p57, #1-5</td>
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<tr>
<td>4&amp;5</td>
<td>15 Quiz#1</td>
<td>Test Equipment, fiber-optic testing, power meter, fiber loss measurement,</td>
<td>P164, #1-5</td>
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<td></td>
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<td>insertion loss tests, OTDR: (optical Time-Domain Reflectometer)</td>
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<td>Week</td>
<td>Chapter</td>
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<td>7</td>
<td>8</td>
<td>Real cables. Fiber classification modes. Single mode fiber. Multimode fiber comparisons.</td>
<td>P 81, #1-5</td>
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<tr>
<td>8,9 &amp;10</td>
<td>9,10,11,&amp;12 Quiz #2</td>
<td>Connectors and splices. The need for connectors and splices. Connector requirements. Causes of loss in an interconnected. Intrinsic factors. Losses in making connectors and splices: displacements, end separation, angular misalignment, insertion loss, other additional losses in an interconnection. Single-mode fiber losses and multimode losses. Fiber termination. Epoxy and polishing. Style connectors (most of these will be done in the lab).</td>
<td>P91, #1-5; p106, #1-5; p124, #1-5</td>
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<td>11</td>
<td>13</td>
<td>Couplers</td>
<td>P137, #1-5</td>
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<tr>
<td>12</td>
<td>14</td>
<td>Light sources. LEDs. Lasers, source characteristics and output pattern. Light detectors, photo diodes, S/N ratio, and bit-error rate.</td>
<td>P146 # 1-5</td>
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<tr>
<td>13,14,15</td>
<td>16,17,18, &amp;19 Quiz #3/Final</td>
<td>System design. The transmission of signals. Organizing optic fiber within a building. LAN and topology. And Cabling</td>
<td>P181, #1-5; p191, #1-5; p205, #1-5.</td>
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**Attendance Policy**

A student is expected to attend all scheduled classes and laboratories. Each instructor will formulate an attendance policy and provide it on the course syllabus. Absences are counted from the first scheduled meeting of the class, and it is the responsibility of each student to know the attendance policy of each instructor in whose class he/she is enrolled. If a student is absent from a class, he/she should give an advanced explanation to the instructor. Absences in a course may affect a student’s final grade. The student is responsible for all assigned work in the course regardless of excused or unexcused absences. Tardiness may also affect a student’s final grade.

Failure to attend class will result in a final course grade of “FA” or “FN” (see explanation below) depending on the individual instructor’s course policy.

- **FA**= failure, attendance-related (unofficial withdrawal) Last recorded date of attendance required.
- **FN**= failure, never attended class (unofficial withdrawal)

**Student Communication Channels**

It is the student’s responsibility to check D2L and MyNSCC email on a regular basis. These are the official communication channels between the college and students. Students are responsible for the information communicated through those channels. D2L contains specific course information and MyNSCC contains information important for other purposes.

**Early Warning System**

Nashville State Community College has implemented an Early Warning System to notify students via e-mail about academic problems such as poor classroom attendance, poor performance on assignments/tests, poor communication skills, late/missing assignments, and/or lack of classroom participation. Please note that Early Warning Alerts do not affect a student’s academic standing.
ADA Compliance Statement
Nashville State complies with the Americans with Disabilities Act. Please contact the Access Services Coordinators at 615-353-3721 or 615-353-3741 if you would like to arrange ADA accommodations.

Classroom Misconduct
Nashville State Community College has a zero tolerance policy for disruptive conduct in the classroom. Students whose behavior disrupts the classroom will be subject to disciplinary sanctions. Please consult your Student Handbook for more specific details.
The instructor has primary responsibility for control over classroom behavior and maintenance of academic integrity. He/she can order temporary removal or exclusion from the classroom of any student engaged in disruptive conduct or in conduct which violates the general rules and regulations of the College.
Disruptive behavior in the classroom may be defined as, but is not limited to, behavior that obstructs or disrupts the learning environment (e.g., offensive language, harassment of students and professors, repeated outbursts from a student which disrupt the flow of instruction or prevent concentration on the subject taught, failure to cooperate in maintaining classroom decorum, etc.), the continued use of any electronic or other noise or light emitting device which disturbs others (e.g., disturbing noises from beepers, cell phones, palm pilots, lap-top computers, games, etc.).
Please be aware that children are not allowed in class or unattended on campus.

Academic Dishonesty (Honor Code)
Any form of academic dishonesty, cheating, plagiarizing, or other academic misconduct is prohibited. "Plagiarism may result from: (1) failing to cite quotations and borrowed ideas, (2) failing to enclose borrowed language in quotation marks, and (3) failing to put summaries and paraphrases in your own words (A Writer’s Reference 331). Academic dishonesty may be defined as, but is not limited to, intentionally trying to deceive by claiming credit for the work of another person, using information from a web page or source without citing the reference, fraudulently using someone else’s work on an exam, paper, or assignment, recycling your own work from another course, purchasing papers or materials from another source and presenting them as your own, attempting to obtain exams/materials/assignments in advance of the date of administration by the instructor, impersonating someone else in a testing situation, providing confidential test information to someone else, submitting the same assignment in two different classes without requesting both instructor’s permission, allowing someone else to copy or use your work, using someone else’s work to complete your own, altering documents, transcripts or grades, and forging a faculty/staff member’s signature.
In addition to other possible disciplinary sanctions that may be imposed through regular college procedures as a result of academic dishonesty the instructor has the authority to assign an “F” or a “Zero” for the exercise, paper, or examination or to assign an “F” for the course. Students may appeal through the appropriate college grade appeal procedures.

Inclement Weather Policy
In the event of an inclement weather event, check the Nashville State web site home page at www.nscc.edu for announcements on campus closures. Campus closures will also be announced on local television stations (channels 2, 4, 5, and 17).
When classes are cancelled, an online assignment will be posted in NS Online. Check your NS Online email for a message from your instructor regarding your online assignment requirements. Even though classes may be cancelled, some areas, i.e. Testing Center, may be open. However, you should check before commuting to campus.

The Vice President for Academic Affairs and the Director of Security are responsible for cancellation decisions during an inclement weather event for the Nashville State main campus and the Southeast campus. Cookeville, Waverly, and Dickson Campus Directors will make class cancellation decisions based on conditions in their respective areas. Decisions about class cancellations are based on actual conditions, not forecasts. The perspective used for making decisions is that of the college as an employer, not as a K-12 institution. Students should use their own best judgment in determining whether to report to campus during inclement weather when classes are not cancelled.

NOTE: This syllabus is meant simply as a guide and overview of the course. Some items are subject to change or may be revised at the instructor’s discretion. Each instructor will further clarify their criteria for grading, classroom procedures, attendance, exams and dates, etc. on his/her course syllabus.