

**NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI**

<b>COURSE PLAN</b>			
<b>Course Title</b>	<b>Optical Communication systems</b>		
<b>Course Code</b>	<b>EC 606</b>	<b>No. of Credits</b>	<b>03</b>
<b>Department</b>	<b>Electronics and Communication Engineering</b>	<b>Faculty</b>	<b>Dr.D.Sriram Kumar</b>
<b>Pre-requisites Course Code</b>	<b>ECPC 28</b>		
<b>Course Coordinator(s) (if, applicable)</b>			
<b>Other Course Teacher(s)/Tutor(s) E-mail</b>		<b>Telephone No.</b>	<b>7598238164</b>
<b>Course Type</b>	<b>Core course</b>		
<b>COURSE OVERVIEW</b>			
<p>Students get exposure to the fundamentals of Optical Communication. Students will be taught about the principle of operation and application of several optical devices and circuits. Students will understand the SOA, EDFA, WDM, SONET, SOLITON concepts. Further they will be exposed to multiplexing &amp; Demultiplexing of Optical Communication, circuits &amp; applications.</p>			
<b>COURSE OBJECTIVES</b>			
<ol style="list-style-type: none"> <li>1. To prepare the students understand the various process and subsystems involved in the optical communication.</li> <li>2. To enable the students appreciate the different multiplexing technologies in the fiber optic communication.</li> <li>3. To design optical communication systems to serve a defined purpose</li> </ol>			
<b>COURSE OUTCOMES (CO)</b>			
<p><b>Course Outcomes</b></p> <ol style="list-style-type: none"> <li>1. Understand the modulation and demodulation schemes in the coherent optical systems</li> <li>2. Understand the various types of the optical amplifiers</li> <li>3. Analyze various multiplexing techniques used and evaluate the recent advances in this field</li> <li>4. Compare the merits and demerits, potential applications of microwave semiconductor devices</li> <li>5. Analyze the operating principle of WDM solutions systems</li> </ol>			

**COURSE TEACHING AND LEARNING ACTIVITIES**

S.No.	Week	Topic	Mode of Delivery
1.	<b>1<sup>st</sup> Week of January (02/01/17 to 06/01/17) 3 Contact Hours</b>	Fundamentals of coherent systems: Basic concepts.	Lecture C&T/ PPT or any suitable mode
2.	<b>2<sup>nd</sup> Week of January (09/01/17 to 13/01/17) 3 Contact Hours</b>	Modulation and demodulation schemes	
3.	<b>3<sup>rd</sup> Week of January (16/01/17 to 20/01/17) 3 Contact Hours</b>	System performance.	
4.	<b>4<sup>th</sup> Week of January (23/01/17 to 27/01/17) 3 Contact Hours</b>	Semiconductor optical amplifiers. EDFA Amplifier	
5.	<b>1<sup>st</sup> Week of February (30/01/17 to 03/02/17) 3 Contact Hours</b>	Raman amplifiers & Modeling and analysis	
6.	<b>2<sup>nd</sup> Week of February (06/02/17 to 10/02/17) 3 Contact Hours</b>	Analysis and digital transmission with high power fiber amplifiers <b>Assessment -1</b>	
7.	<b>3<sup>rd</sup> Week of February (13/02/17 to 17/02/17) 3 Contact Hours</b>	Multichannel systems: WDM light wave systems	
8.	<b>4<sup>th</sup> Week of February (20/02/17 to 24/02/17) 3 Contact Hours</b>	TDM & code division multiplexing	
9.	<b>1<sup>st</sup> Week of March (27/02/17 to 03/03/17) 3 Contact Hours</b>	Advances in wavelength division multiplexing / demultiplexing technologies	
10.	<b>2<sup>nd</sup> Week of March (06/03/17 to 10/03/17) 3 Contact Hours</b>	SONET/SDH, ATM, IP, storage area networks	
11.	<b>3<sup>rd</sup> Week of March (13/03/17 to 17/03/17) 3 Contact Hours</b>	Wavelength routed networks	
12.	<b>4<sup>th</sup> Week of March (20/03/17 to 24/03/17) 3 Contact Hours</b>	Next generation optical Internets <b>Assessment-2</b>	
13.	<b>5<sup>th</sup> Week of March (27/03/17 to 31/03/17) 3 Contact Hours</b>	Soliton systems: Nonlinear effects	
14.	<b>1<sup>st</sup> Week of April (03/04/17 to 07/04/17) 3 Contact Hours</b>	Soliton – based communication	
15.	<b>2<sup>nd</sup> Week of April (10/04/17 to 14/04/17) 3 Contact Hours</b>	High speed and WDM soliton systems <b>Re-Assessment</b>	



<b>COURSE ASSESSMENT METHODS</b>				
<b>S.No.</b>	<b>Mode of Assessment</b>	<b>Week/Date</b>	<b>Duration</b>	<b>% Weightage</b>
1.	Assessment - 1	2 <sup>nd</sup> Week of February	60 Minutes	15
2.	Assessment - 2	4 <sup>th</sup> Week of March	60 Minutes	15
3.	Re-Assessment	2 <sup>nd</sup> Week of April	60 Minutes	15
4.	Seminars / Assignments	1 <sup>st</sup> Week of March – 4 <sup>th</sup> week of March		10
5	Project / Research Paper writing	1 <sup>st</sup> Week of March – 4 <sup>th</sup> week of March		10
5.	End assessment	4 <sup>th</sup> Week of April	180 Minutes	50

**ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals, etc**

**Reference books**

G.P.Agrawal, Fiber Optic Communication Systems (3/e), Wiley, 2002

B.P.Pal , Guided Wave Optical Components and Devices, Elsevier , 2006

K – P. Ho Phase-modulated Optical Communication Systems, 2005

C.S.Murthy & M.Gurusamy, WDM Optical Networks, PHI, 2002

**Websites**

1. [http:// www.ofcnfoec.org](http://www.ofcnfoec.org)
2. [http:// www.occfiber.com/](http://www.occfiber.com/)
3. [http:// www.rp-photonics.com/optical\\_fiber\\_communications.html](http://www.rp-photonics.com/optical_fiber_communications.html)
4. [en.wikipedia.org/wiki/Optical\\_fiber](http://en.wikipedia.org/wiki/Optical_fiber)

National Programme on Technology Enhanced Learning (NPTEL)

Massive Open Online courses (MOOC)

Mc Graw Hill Access Engineering Library (<http://www.accessengineeringlibrary.com>)

**COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)**

- Feedback from the students during class committee meetings
- Anonymous feedback through questionnaire

**COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)**

CORRESPONDENCE

1. All the students are advised to check their NITT WEBMAIL/group mail/suggested by the course faculty, class representative regularly. All the correspondence (schedule of classes/ schedule of assessment/ course material/ any other information regarding this course) will be done through them only.
2. Queries (if required) to the course teacher shall only be emailed to the email id specified by the teacher.

ATTENDANCE

3. Attendance will be taken by the faculty in all the contact hours. Every student should maintain minimum of 75 % physical attendance in these contact hours along with assessment criteria to attend the end semester examination.
4. Any student, who fails to maintain 75% attendance need to appear for the compensation assessment (CPA). Student who scores more than 60 % marks in the CPA along with assessment criteria will be eligible for attending the end semester examination.
5. Those students who have attendance lag and also missed any of the continuous assessments (CAs) can appear for CPA to get eligibility for writing the end semester examination as quoted in Pt. 2. Their scores in the CPA WILL NOT be taken into account for computing marks for CA.
6. Students not having 75% minimum attendance at the end of the semester and also fail in CPA (scoring less than 60%) will have to RE DO the course.

ASSESSMENT

7. Attending all the assessments are MANDATORY for every student.
8. If any student is not able to attend any of the continuous assessments due to genuine reason, student is permitted to attend the compensation assessment (CPA) with 15 % weightage.
9. At any case, CPA will not be considered as an improvement test.
10. Students are expected to score minimum 30% of the maximum mark of the class in the CAs to attend the end semester examination in addition to the attendance requirement. Otherwise the student is permitted to attend CPA and is expected to score more than 60% marks to get eligibility to appear for end semester examination. However, the score in CPA WILL NOT be considered for computing marks for CA. Student who fails to score 60% in CPA will take up additional assignments to get eligibility for writing End assessment examination.
11. Finally, every student is expected to score minimum 40% of the maximum mark of the class in the total assessment (1, 2, 3, 4 and 5) to pass the course. Otherwise the student would be declared fail and 'F' grade will be awarded. Further he can take up only FORMATIVE ASSESSMENT.

**ACADEMIC HONESTY & PLAGIARISM**

1. All the students are expected to be genuine during the course work. Taking of information by means of copying simulations, assignments, looking or attempting to look at another student's paper or bringing and using study material in any form for copying during any assessments is considered dishonest.
2. Tendering of information such as giving one's program, simulation work, assignments to another student to use or copy is also considered dishonest.
3. Preventing or hampering other students from pursuing their academic activities is also considered as academic dishonesty.
4. Any evidence of such academic dishonesty will result in the loss of marks on that assessment. Additionally, the names of those students so penalized will be reported to the class committee chairperson and HoD of the concerned department.
5. Students who honestly producing ORIGINAL and OUTSTANDING WORK will be REWARDED.

**ADDITIONAL COURSE INFORMATION**

Contact information : [srk@nitt.edu](mailto:srk@nitt.edu)  
Queries can be clarified through mail or in person.  
Feedback will be collected at the end of the Semester

**FOR SENATE'S CONSIDERATION**

Course Faculty  CC-Chairperson  HOD   
*4/1/2017*