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CIRCULAR

Subject: 21TC72- Optical Communication and Optical Networks updated syllabus regarding...

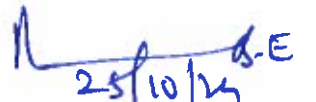
Reference:

1. e-Mail from Chairperson BoS ECE/ETC VTU Belagavi dated 08.10.2024
2. The Hon'ble Vice-Chancellor's approval dated: 25.10.2024

The course "**21TC72: Optical Communication and Optical Networks**" has been updated based on feedback from stakeholders, by the chairperson and members of the Board of Studies in Electronics and Communication Engineering. The Chairperson and BoS members revised the syllabus after conducting an online meeting with faculty from colleges offering the Electronics and Telecommunication Engineering program. The updated syllabus, submitted by the ECE/ETC Board of Studies, is attached to this circular for reference and use by all stakeholders.

Principals are requested to notify the concerned faculty and students about these updates.

Encl: Syllabus copy


25/10/24
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To,

All the Principals of Engineering Colleges are under the ambit of the University where Electronics and Telecommunication Engineering program is being offered

Copy to

- The Hon'ble Vice-Chancellor through the secretary to VC for information
- The Registrar (Evaluation) for information and needful
- The Director, ITI,SMU,VTU Belagavi for information and needful also request to upload the circular on the University website
- The Special Officer QPDS section of VTU Belagavi for information and needful
- Office copy



VII Semester

Optical Communication and Optical networks			
Course Code	21TC72	CIE Marks	50
Teaching Hours/Week (L:T:P:S)	2:0:0:1	SEE Marks	50
Total Hours of Pedagogy	30	Total Marks	100
Credits	2	Exam Hours	3
<i>Non-MCQ pattern of CIE and SEE</i>			
Module-1			
<p>Optical Fiber Structures: Optical Fiber Modes and Configurations, Single mode fibers, Fiber materials. Attenuation and Dispersion: Attenuation, Absorption, Scattering Losses, Bending loss, Signal Dispersion. [Text 1: 3.1, 3.2, 2.3 [2.3.1 to 2.3.4], 2.4 [2.4.1, 2.4.2], 2.5, 2.7].</p>			
Module-2			
<p>Optical Sources and detectors: Light Emitting Diode: LED Structures, Light source materials, Quantum efficiency and LED power, Laser Diodes (Basics). Photodetectors: The pin Photodetector, Avalanche Photodiodes. WDM Concepts: Overview of WDM, Isolators and Circulators [Text1: 4.2 ,4.3, 6.1, 10.1, 10.3, 10.4, 10.5, 10.7]</p>			
Module-3			
<p>Introduction to Optical Networks: Telecommunication network Architecture, services, circuit switching and packet switching, optical Networks, transmission basics, network evolution. (Text 2: 1.1,1.2,1.3,1.4,1.5,1.6,1.7,1.8)</p>			
Module-4			
<p>Transmission System Engineering: System model, Power penalty, Transmitter, receiver, (Text 2: 5.1,5.2,5.3,5.4,5.5,5.6,5.7,5.8,5.12) Client layers of optical network: SONET/SDH, optical transport network, Ethernet. (Text 2: 6.1, 6.2,6.3,6.4,6.5,6.6)</p>			
Module-5			
<p>WDM Network Elements: Optical line terminals, optical line amplifiers, optical add/drop multiplexers, optical cross connects. (Text 2: 7.1,7.2,7.3,7.4)</p>			
<p>Assessment Details (both CIE and SEE) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together</p>			
<p>Continuous Internal Evaluation (CIE): CIE will be the same as other core theory courses. CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.</p>			

Semester End Examination (SEE):

For non-MCQ pattern of CIE and SEE

Continuous Internal Evaluation (CIE):

At the beginning of the semester, the instructor/faculty teaching the course has to announce the methods of CIE for the course.

Three Unit Tests each of 20 Marks (duration 01 hour)

1. First test at the end of 5th week of the semester
2. Second test at the end of the 10th week of the semester
3. Third test at the end of the 15th week of the semester

Two assignments each of 10 Marks

4. First assignment at the end of 4th week of the semester
5. Second assignment at the end of 9th week of the semester

Group discussion/Seminar/quiz any one of three suitably planned to attain the COs and POs for 20 Marks (duration 01 hours)

6. At the end of the 13th week of the semester

The sum of three tests, two assignments, and quiz/seminar/group discussion will be out of 100 marks and will be scaled down to 50 marks

(to have less stressed CIE, the portion of the syllabus should not be common /repeated for any of the methods of the CIE. Each method of CIE should have a different syllabus portion of the course).

CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

Semester End Examination:

Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for the subject (duration 03 hours)

1. The question paper will have ten questions. Each question is set for 20 marks.
2. There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), **should have a mix of topics** under that module.

The students have to answer 5 full questions, selecting one full question from each module.

Suggested Learning Resources:

Text Books

- Gerd Keiser, 'Optical Fiber Communication', 5th Edition, McGraw Hill Education (India) Private Limited, 2016. ISBN:1-25-900687-5.
- Kumar Sivarajan and Rajiv Ramaswamy, Galen Sasaki, 'Optical networks: A practical perspective', 3rd edition, Morgan Kauffman Publishing, 2010.

Reference Books

- John M Senior, 'Optical Fiber Communications, Principles and Practice', 3rd Edition, Pearson Education, 2010. ISBN:978-81-317-3266-3
- 2. Biswajit Mukherjee, 'Optical Communication Networks', TMH, 1998.