| OPTICAL FIBER COMMUNICATION SYSTEMS | | | | | | | | | | |
|-------------------------------------|--|--|--|--|--|--|--|--|--|--|
| 1 | Course Title: | OPTICA | - FIBER COMMUNICATION SYSTEMS | | | | | | | |
| 2 | Course Code: | EEM441 | 2 | | | | | | | |
| 3 | Type of Course: | Optional | | | | | | | | |
| 4 | Level of Course: | First Cyc | le | | | | | | | |
| 5 | Year of Study: | 4 | | | | | | | | |
| 6 | Semester: | 8 | | | | | | | | |
| 7 | ECTS Credits Allocated: | 4.00 | | | | | | | | |
| 8 | Theoretical (hour/week): | 3.00 | | | | | | | | |
| 9 | Practice (hour/week): | 0.00 | | | | | | | | |
| 10 | Laboratory (hour/week): | 0 | | | | | | | | |
| 11 | Prerequisites: | None | | | | | | | | |
| 12 | Language: | Turkish | | | | | | | | |
| 13 | Mode of Delivery: | Face to f | ace | | | | | | | |
| 14 | Course Coordinator: | Doç. Dr. | SAİT ESER KARLIK | | | | | | | |
| 15 | Course Lecturers: | - | | | | | | | | |
| 16 | Contact information of the Course Coordinator: | E-posta:ekarlik@uludag.edu.tr Tel: (224) 294 20 95 | | | | | | | | |
| 17 | Website: | | | | | | | | | |
| 18 | Objective of the Course: | To inform students about optical fiber communication systems including various blocks of light emitters, amplifiers and photodetectors | | | | | | | | |
| 19 | Contribution of the Course to Professional Development: | Learning Optical Fiber Communication Systems | | | | | | | | |
| 20 | Learning Outcomes: | | | | | | | | | |
| | | 1 | To have knowledge about the structure and transmission characteristics of optical fiber communication systems | | | | | | | |
| | | 2 | Ability to determine basic problems in optical fiber communication systems | | | | | | | |
| | | 3 | To be able to solve basic problems in optical fiber communication systems | | | | | | | |
| | | 4 | To know the structure and characteristic parameters of light emitters and photodetectors used in these systems | | | | | | | |
| | | 5 | To be able to analyze the receiver performance | | | | | | | |
| | | 6 | To make use of line-coding methods and performance analysis techniques used in digital transmission systems | | | | | | | |
| | | 7 | To be familiar with coherent communication systems | | | | | | | |
| | | 8 | | | | | | | | |
| | | 9 | | | | | | | | |
| | | 10 | | | | | | | | |
| 21 | Course Content: | | | | | | | | | |
| | | Co | ourse Content: | | | | | | | |
| Week | Interretical | o oti | Practice | | | | | | | |
| 1 | systems, the mode theory in optical fiber communi systems, the mode theory in optical waveguides, modes propagating in t fiber | cation he optical | | | | | | | | |

| 2 | Attenuation in the optical fiber | | | | |
|--|--|---------------------|--|--|---|
| 3 | Dispersion in the optical fiber | | | | |
| 4 | Design optimization in the single-mo light emitters | de fiber, | | | |
| 5 | Launching the light to the optical fibe coupling | er, | | | |
| 6 | Photodetectors, operating principles optical receiver, performance analys digital receiver | of the is in the | | | |
| 7 | Digital transmission systems: point-t links, line-coding | o-point | | | |
| 8 | Midterm Exam + General Review | | | | |
| 9 | Digital transmission systems: eye di the effect of noise on system perforr | agrams, nance | | | |
| 10 | Coherent communication systems- Homodyne and heterodyne detection semiconductor laser requirements, polarization control | n, | | | |
| 11 | Coherent communication systems – modulation methods | | | | |
| 12 | Advanced techniques and systems i communication - WDM and local are networks | n optical a | | | |
| 13 | Advanced techniques and systems i communication - optical amplifiers a | n optical nd | | | |
| Activit | :es | | Number | Duration (hour) | Total Work Load (hour) |
| Theore | Materials: | | MqGraw-Hill, 2010. | 3.00 | 42.00 |
| Practica | als/Labs | | | 0.00 | 0.00 |
| Self stu | dy and preperation | | 3 Optical Fiber Commu | hications: Principle: | and Practice, |
| Homew | vorks | | | 0.00 | 0.00 |
| Project | 8 | | 0 | 0.00 | 0.00 |
| Field S | tudies | | 0 | 0.00 | 0.00 |
| | | | U | 0.00 | |
| ₩ ₩ ₽₽₽₽ | | NUMBE | | 4.00 | 4.00 |
| Others | EARNING ACTIVITIES | NUMBE | о weiigнт 0 | 4.00 0.00 | 4.00 0.00 |
| Others | LEARNING ACTIVITIES | NUMBE | 0 weight 0 40 ₁ 00 | 4.00 4.00 4.00 | 4.00 0.00 4.00 |
| Total W | LEARNING ACTIVITIES | NUMBE | 0 weight 0 40,00 | 4.00 0.00 4.00 | 4.00 0.00 4.00 124.00 |
| HERM Others FINTE Total W | Vork Load | NUMBE | 0 0 40,00 0 000 | 4.00 0.00 4.00 | 4.00 0.00 4.00 124.00 4.00 |
| Total W | Vork Load | NUMBE | 0 0 40,00 0 000 | 4.00 0.00 4.00 | 4.00 0.00 4.00 124.00 4.00 4.00 |
| Total W ECTS O Total | Vork Load Vork Load Vork Load | NUMBE | 0 WEIGHT 0 40,00 000 100.00 | 4.00 0.00 4.00 | 4.00 0.00 4.00 124.00 4.00 4.00 |
| Total W Flore Flore Total W Flore Contrib Succes | Vork Load Vork Load Vork Load Vork Koga/950 hr Credit of the Course pution of Term (Year) Learning Activit ss Grade | NUMBE | 0 40100 100.00 40.00 | 4.00 0.00 4.00 | 4.00 0.00 4.00 124.00 4.00 4.00 |
| Total W HOLDER Total W HOLDER ECTS O Total Contrib Succes Contrib | Variation of Final Exam to Success Grade | NUMBE | WEIGHT 0 40,00 100.00 40.00 60.00 | 4.00 0.00 4.00 | 4.00 0.00 4.00 124.00 4.00 4.00 |
| Term Others Others Finite Total W Formew ECTS O Total Contrib Success Contrib Total | Vork Load Vork Load Vork Load Vork Load Vork Load Vork Gall/So hr Credit of the Course Pution of Term (Year) Learning Activit ss Grade Pution of Final Exam to Success Grad | NUMBE | WEIGHT 0 40,00 100.00 60.00 100.00 | 4.00 0.00 4.00 | 4.00 0.00 4.00 124.00 4.00 4.00 |
| Total W Flotare Total W Flotare ECTS O Total Contrib Succes Contrib Total Measur Course | EXAMING ACTIVITIES LEXEMING ACTIVITIES Xams Vork Load Vork Load </th <th>NUMBE</th> <th>WEIGHT 0 40,00 100.00 40.00 60.00 100.00 Measurement and eval the Rules & Regulation Undergraduate Education</th> <th>4.00 0.00 4.00 4.00 uation are performed s of Bursa Uludağ U on.</th> <th>4.00 0.00 4.00 124.00 4.00 4.00 4.00 d according to Iniversity on</th> | NUMBE | WEIGHT 0 40,00 100.00 40.00 60.00 100.00 Measurement and eval the Rules & Regulation Undergraduate Education | 4.00 0.00 4.00 4.00 uation are performed s of Bursa Uludağ U on. | 4.00 0.00 4.00 124.00 4.00 4.00 4.00 d according to Iniversity on |

| 25 | CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS | | | | | | | | | | | | | | | |
|--|--|-----|-----|-----|----------|-----|--------|-----|-----|-------------|------|------|----------|------|------|------|
| | PQ1 | PQ2 | PQ3 | PQ4 | PQ5 | PQ6 | PQ7 | PQ8 | PQ9 | PQ1 0 | PQ11 | PQ12 | PQ1 3 | PQ14 | PQ15 | PQ16 |
| ÖK1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ÖK2 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ÖK3 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ÖK4 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ÖK5 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ÖK6 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ÖK7 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LO: Learning Objectives PQ: Program Qualifications | | | | | | | | | | | | | | | | |
| Contrib ution Level: | 1 very low 2 low | | | | 3 Medium | | 4 High | | | 5 Very High | | | | | | |