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ΣΧΟΛΗ ΜΗΧΑΝΙΚΩΝ
Τμήμα Ηλεκτρολόγων &Ηλεκτρονικών Μηχανικών

www.eee.uniwa.gr

Θηβών 250, Αθήνα-Αιγάλεω 12241

Τηλ. +30 210 538-1225, Fax. +30 210 538-1226

UNIVERSITY of WEST ATTICA
FACULTY OF ENGINEERING
Department of Electrical &Electronics Engineering

www.eee.uniwa.gr

250, Thivon Str., Athens, GR-12241, Greece

Tel: +30 210 538-1225, Fax: +30 210 538-1226

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Ηλεκτρικές & Ηλεκτρονικές Επιστήμες μέσω Έρευνας

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Master of Science By Research in

Electrical & Electronics Engineering

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STUDENT EVALUATION OF COURSE MODULE

Course title:

Fiber Bragg gratings in optical fiber communications and sensing applications

Author

Prof. N. A. Stathopoulos

Sample student evaluation material:

1. Lab project
   - Measurement of an FBG spectral reflectivity using an Optical Spectrum Analyzer
   - Calculation of the index modulation and the length of inscription
   - Measurement of the spectral emission of a pumped Erbium doped fiber
   - Design of an FBG for the equalization of the EDF's emission spectrum
2. Theoretical assessment
   - Provide the main factors that determine the reflectivity of a uniform FBG
   - What are the cons and pons between the phase mask and the fs-Laser inscription techniques?
   - Name the categories of interrogation techniques for multiple FBG sensors
   - What is the main drawback of using an FBG as a strain sensor?
   - What is the principle of operation for a long period grating sensor?
   - Choose the right type of FBG for the dispersion compensation, for a WDM optical fiber communication system and for an OADM operation, respectively.
3. Exercise sample
   Given a required maximum reflectivity of a uniform FBG for a specific wavelength, calculate the index modulation depth, with a specified inscription length. Comment if the result is doable.