EMA 4506: EMERGING MATERIALS

Spring 2016, M and W

3:00 - 4:15 PM, CB1 0105

COURSE CREDIT AND ORGANIZATION:

3 Credit hours. The course comprises classroom lectures, which will include guest lectures from experts working in the field of advanced and emerging materials. The class will meet Monday and Wednesday 3:00 – 4:15 PM in CB1 0105

PREREQUISITES:

EGN 3365: Structure and Properties of Materials OR

EMA 3706: Structure and Properties of Aerospace Materials

TEXTBOOK:

There is no appropriate text book for this course. Hand-outs (journal articles) and suggested reading/video assignments will be given.,

INSTRUCTOR:

Dr. Kathleen Richardson, Tel: 407-823-6815 Office location: CREOL, A110 Electronic Office Hours: via e-mail including weekends Office Hours: By appointment only Class Time: 3:00 – 4:15 PM Lecture Room: CB1 0105 Email: <u>kcr@creol.ucf.edu</u>

CONTACT HOURS: Tuesday 1:00 - 2:45pm, by appointment

COURSE OBJECTIVES:

1. To explain the importance of innovations in materials technology and their applications

2. To obtain a knowledge of the methodology to develop new and advanced materials

3. To learn about different advanced and emerging materials that are being developed during recent years

4. To learn about new materials which will be used in new technologies and processes in different industries

5. To understand and appreciate the exceptional properties of these new materials

6. To appreciate the processing-structure-property relationships of these new-generation materials

7. To be able to use the knowledge gained in this course for material selection, design, and substitution in emerging engineering applications.

CATALOG DESCRIPTION:

Structure, properties, processing and commercial manufacturing of modern emerging materials

GRADING:

The grade in the course will be based on:

Quizzes....10%

Mid-Term Examination 30%

Class Presentations 30%

FINAL Examination 30%

POLICY for ASSIGNMENTS and EXAMs:

All assignments are due on the date shown and those submitted past the due date/time (start of class that day) will not be accepted and will receive a zero. Assignments will be submitted in hard copy (in class) AND electronic form (scanned, pdf) by the due date and time. The latter should be uploaded to the class' Webcourse@UCF web site. This will ensure there is no question as to the 'date stamp' of receipt. Assigned class content (whether submitted or not) will be considered appropriate 'fair game' for scheduled exams.

Exams will ONLY be offered on the date shown. Exams that are not taken will result in a zero being given for that grade entry. Conflicts with the schedule exam periods, must be documented in writing to the instructor, no later than **15th February 2016**. It will then be up to the student to coordinate with the instructor for a *possible* alternative time. It is the Professor's right to decline a reschedule request due to a conflict as the Exam periods will correspond with scheduled class times. If approved, it is the student's responsibility to carry out the exam under conditions and time constraints, defined.

ATTENDANCE verification

All instructors/faculty are required to document students' academic activity at the beginning of each course. In order to document that you began this course, please complete the following academic activity by the end of the first week of classes or as soon as possible after adding the course.

Failure to do so may result in a delay in the disbursement of your financial aid.

Attendance will be periodically verified by regular, 1 question, pop quizzes.

IMPORTANT DATES:

DROP deadline – Thursday January 14th 2016

Mid-term Exam – March 2nd 2016

Class Presentations – April 11-25th (5 class periods) each student group will be assigned a 15 minute slot and graded by class and by group (details to follow).

LAST class – Monday April 25th 2016

FINAL EXAMINATION Wednesday, May 04, 2016 1:00 PM - 3:50 PM

HOLIDAYS:

January 18th (Monday) Martin Luther King, Jr. Day

March 7-12th 2016 **Spring Break**

Academic Integrity

As members of the UCF community, a mutual commitment to truthfulness, honor, and responsibility, is expected of faculty and students. We recognize that academic dishonesty detracts from the value of a UCF degree. Therefore, we shall not tolerate lying, cheating, plagiarism or stealing in any form. When, in the opinion of a faculty member, there is evidence that a student has committed an act of academic dishonesty, the faculty member shall notify the student immediately and the student will receive a ZERO for the assignment's grade. In addition the faculty member will make a formal written charge of academic dishonesty, including a description of the misconduct, to the Associate Dean for Curriculum in the Office of Undergraduate Studies.

COURSE CONTENT:

Electronic Materials Electronic & Magnetic Material Applications Magnetic Materials Nanoparticles & Agriculture Applications High Temperature Materials & Applications Composites Graphene and it's Applications Soft Matter Ceramics **Polymer Materials & Applications Photovoltaics** Thermoelectrics Human Physiology NanoMedicine Materials Fabrication Materials Characterization **Biomaterials**