

**Course Syllabus**  
**EMA 6106, Advanced Phase Diagrams**  
**Spring 2016**

1. Course Description – This is a graduate course in phase diagrams, including unary, binary and ternary phase diagrams in metals, ceramics, etc. Topics covered include the thermodynamics behind phase diagrams, computational techniques to estimate phase diagrams and real-world uses of phase diagrams to solve problems. (3 credit hours).
2. Pre-requisites and Co-requisites – None.
3. Course Objectives Include:
  - a. to develop an understanding of phase diagrams, including the thermodynamics of phase diagrams;
  - b. to become familiar with traditional terminology, conventions and uses of phase diagrams in materials science and engineering;
  - c. to develop an understanding the capabilities and limitations of computational techniques for estimating phase diagrams.
4. Instructor – Gerhard E. Fuchs
  - a. Office location: 116 Rhines
  - b. Telephone: 352-846-3317
  - c. E-mail address: [gfuch@mse.ufl.edu](mailto:gfuch@mse.ufl.edu) (note: do not use e-learning for critical communication)
  - d. Course website:
  - e. Office hours: regular times TBD, based on graduate student and lecturer schedules and by appointment (email a request).
5. Teaching Assistant – TBA
  - a. Office location: TBA
  - b. E-mail address: TBA
  - c. Office hours: TBA
6. Meeting Times – MWF, Period 6.
7. Meeting Location – CSE E122.
8. Final Exam – Per the University pre-assigned schedule, the OPTIONAL final exam is scheduled for Wednesday, April 27, 2016, from 12:30 PM until 2:30 PM.
9. Textbook Required – None
10. Other Reading Materials and Resources –
  - a. “Phase Equilibria, Phase Diagrams and Phase Transformations”, 2<sup>nd</sup> edition, Mats Hillert, Cambridge University Press, (2008).
  - b. “Phase Transformation in Metals and Alloys”, 3<sup>rd</sup> Edition, David A. Porter, Kenneth E. Easterling and Mohamed Y. Sherif, CRC Press, (2009).
  - c. Various handouts throughout the course.

## 11. Grading –

Without Optional Final:

Approximately bi-weekly homework: 20%

Term Paper: 20%

3 Mid-term exams (20% each): 60%

With Optional Final:

Approximately bi-weekly homework: 15%

Term Paper: 20%

3 Mid-term exams (15% each): 45%

Optional Final exam: 20%

No extra credit work accepted.

Tentative schedule:

| Week # | Week of: | Monday         | Wednesday    | Friday             | Topic        |
|--------|----------|----------------|--------------|--------------------|--------------|
| 1      | 1/4      |                |              |                    |              |
| 2      | 1/11     |                |              |                    |              |
| 3      | 1/18     | <i>Holiday</i> |              |                    |              |
| 4      | 1/25     |                |              |                    |              |
| 5      | 2/1      |                |              |                    |              |
| 6      | 2/8      |                |              | Midterm #1         |              |
| 7      | 2/15     |                |              |                    |              |
| 8      | 2/22     |                |              |                    |              |
| 9      | 2/29     | <i>Spring</i>  | <i>Break</i> | <i>Spring</i>      | <i>Break</i> |
| 10     | 3/7      |                |              |                    |              |
| 11     | 3/14     |                |              | Midterm #2         |              |
| 12     | 3/21     |                |              |                    |              |
| 13     | 3/28     |                |              |                    |              |
| 14     | 4/4      |                |              |                    |              |
| 15     | 4/11     |                |              |                    |              |
| 16     | 4/18     | Midterm #3     |              | <i>Reading day</i> |              |
| 17     | 4/25     | Finals         | Week         | Finals             | Week         |

Homework assignments are given approximately bi-weekly, due within 1 week of assignment. Late homework accepted until solutions handed-out, but penalized 10% per day after due date. All work must be shown for full/partial credit. Once a solution set has been posted, late homework can not be accepted for a grade.

Term Paper: All students will be required to complete a 10-15 page paper (text only) on some aspect of the application of phase diagrams to materials science and engineering. A font size of 12, 1" margins and single spacing within the paragraphs should be used. The paper should also include appropriate tables and figures (not included in the text page count). All work taken from the literature should be appropriately referenced. The subject should be identified prior to Friday, February 28<sup>th</sup>) and approved by the instructor. The

report shall be the students work and plagiarism of books, papers, internet sites, etc will result in a zero “0” grade. The report will be due on last day of class (April 23<sup>rd</sup>).

12. Grading Scale -

|              |     |      |      |     |      |      |     |      |      |     |      |     |
|--------------|-----|------|------|-----|------|------|-----|------|------|-----|------|-----|
| Percentage   | ≥92 | ≥88  | ≥84  | ≥80 | ≥76  | ≥72  | ≥68 | ≥65  | ≥62  | ≥59 | ≥56  | <56 |
| Letter Grade | A   | A-   | B+   | B   | B-   | C+   | C   | C-   | D+   | D   | D-   | E   |
| Grade Points | 4.0 | 3.67 | 3.33 | 3.0 | 2.67 | 2.33 | 2.0 | 1.67 | 1.33 | 1.0 | 0.67 | 0   |

(Grade percentages containing decimals will be rounded upwards).

13. Honesty Policy – All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others. Students found in violation of this policy will receive a failing (E) grade in the course.

14. Accommodation for Students with Disabilities – Students requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

15. UF Counseling Services – Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- a. University Counseling Center, 301 Peabody Hall, 392-1575, Personal and Career Counseling.
- b. SHCC mental Health, Student Health Care Center, 392-1171,
- c. Personal and Counseling Center for Sexual Assault/Abuse Recovery and Education (CARE), Student Health Care Center, 392-1161, sexual assault counseling.
- d. Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

16. Software Use – All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.