Appendix A – Course Syllabi

Please use the following format for the course syllabi (2 pages maximum in Times New Roman 12 point font)

1. Course number and name

2. Credits and contact hours

3. Instructor's or course coordinator's name

4. Text book, title, author, and year
    a. other supplemental materials

5. Specific course information
    a. brief description of the content of the course (catalog description)
    b. prerequisites or co-requisites
    c. indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program

6. Specific goals for the course
    a. specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.
    b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

7. Brief list of topics to be covered

Appendix B – Faculty Vitae

Please use the following format for the faculty vitae (2 pages maximum in Times New Roman 12 point type)

1. Name

2. Education – degree, discipline, institution, year

3. Academic experience – institution, rank, title (chair, coordinator, etc. if appropriate), when (ex. 1990-1995), full time or part time

4. Non-academic experience – company or entity, title, brief description of position, when (ex. 1993-1999), full time or part time

5. Certifications or professional registrations

6. Current membership in professional organizations

7. Honors and awards

8. Service activities (within and outside of the institution)

9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation

10. Briefly list the most recent professional development activities

Drexel University
College of Engineering [E]
MATE 366, Processing Metallic Materials Course Outline & Syllabus
Fall 2012-2013 [201215]
Direct Link to this Syllabus :
http://drexel.goaefis.net/index.cfm/page/Syllabus.View.cfm?SyllabusID=39412&pdf=True

1. **MATE 366, A Processing Metallic Materials**
2. **Credits :** 4.50 **Contact Hours :** Curtis Hall 231 T 1530-1730,Curtis Hall 341 TR 1530-1650
3. **Instructor :** Mitra Taheri (Assistant Professor)
4. **Textbook and Materials :** Required* and Recommended** Text(s):1. Phase Transformations in Metals and Alloys, 3rd Ed., by Porter & Easterling*2. Physical Metallurgy, 4th Ed., by Reed-Hill/Abbaschian (available online via Hagerty Library)**
   a. **Other Supplemental Materials :** Coursenotes and laboratory introductions will be available on the course blog: http://in.materials.drexel.edu/blogs/metals/
5. **Specific Course Information :**
   a. **Brief description of the content of the course (Course Catalog Description) :** Covers solidification processing, casting and welding, heat flow analysis, solid-state transformations, precipitation hardening, transformations in steels, martensite transformations, and industrial case studies. This is a writing intensive course.
   b. **Pre-requisites or Co-requisites :** MATE 245 (Minimum Grade: D) and MATE 341 (Minimum Grade: D)
6. **Specific Goals for the Course :**
   a. **Course Outcomes :**
      1. An understanding of the techniques for casting metallic alloys.
      2. An understanding of typical solutions to the diffusion equation both for heat and for solute. Insight into the use of numerical methods for solution of diffusion problems.
      3. An understanding of the theories of nucleation, diffusional growth and interfacial energy driven coarsening both in solidification and in the solid state.
      4. Insight into how heat-treatment of industrial alloys of aluminum and steel can be understood in terms of transformation theory.
      5. An understanding of how scientific insight can be of value in understanding materials processing and thus designing improved alloys and their processing.
   b. **Program Student Learning Outcomes :**
      (a) Ability to apply mathematics, science and engineering principles.
      (b) Ability to design and conduct experiments, analyze and interpret data.
      (d) Ability to function on multidisciplinary teams.
      (e) Ability to identify, formulate and solve engineering problems.
      (f) Understanding of professional and ethical responsibility.
      (g) Ability to communicate effectively.
      (h) The broad education necessary to understand the impact of engineering solutions in a global and societal context.
      (i) Recognition of the need for and an ability to engage in life-long learning.

(j) Knowledge of contemporary issues.
(k) Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

7. **Brief List of Topics to be Covered :** Course Overview: Materials science is a field that correlates the structure and properties of various types of materials, ranging from metals to polymers. The main objective in this course is to focus on how to quantitatively predict the structure of metals, specifically the microstructure, by assessing the processing conditions using thermodynamic and kinetic analysis. The optimization of the properties and performance of various metallic components such as turbine blades, baseball bats, auto body parts, and even AC motors is dependent on controlling processing steps to achieve the overall desired microstructure. This course focuses on this important relationship, and uses examples from both the instructor's research and industry to demonstrate these fundamentals. Course Objectives: To learn the principles of basic thermodynamics, solidification, casting, heat flow analysis, solid state transformations, precipitation, martensitic transformations, industrial case studies, nucleation and growth kinetics, recrystallization, and microstructural evolution.

1. **Name:**
   Adam K. Fontecchio, Ph.D., Professor
2. **Education:**
   - Ph.D, Physics, 2002, Brown University
   - M.Sc., Physics, 1998, Brown University
   - B.A., Physics, 1996, Brown University
3. **Academic Experience:**
   - Drexel Univ., Professor, Dept. of Electrical and Computer Eng., 2012-present, FT
   - Drexel Univ., Associate Dean for UG Affairs, College of Eng., 2010-present, FT
   - Drexel Univ., Affiliated Faculty, Dept. of Materials Science, 2005-present, FT
   - Drexel Univ., Associate Professor, Dept. of Electrical and Computer Eng., 2008-12, FT
   - Drexel Univ., Associate Dean for Special Projects, College of Eng., 2008-10, FT
   - Drexel Univ., Asst. DH for UG Affairs, Dept. of Electrical and Computer Eng., 2008-10, FT
   - Drexel Univ., Assistant Professor., Dept. of Electrical and Computer Eng., 2002-08, FT
   - Univ. of Massachusetts at Dartmouth, Adjunct Professor, Physics Dept., 2002, PT
4. **Non-Academic Experience:**
   - MetaTenna, LLC., President and Founder, 2008 – present, PT
   - Fontecchio Consulting, LLC., President, 2004 – present, PT
5. **Certifications and Professional Registrations:**
   - N/A
6. **Current Membership in Professional Organizations:**
   - Senior Member, IEEE
   - Member, International Liquid Crystal Society (ILCS)
   - Member, American Society for Engineering Education (ASEE)
7. **Honors and Awards:**
   - Electrical and Computer Engineering Department Doctoral Mentor Award (2010)
   - Drexel ECE Outstanding Research Achievement Award (2006)
   - Drexel Graduate Student Association Outstanding Mentor Award (2006)
   - International Liquid Crystal Society Multimedia Prize (2004)
   - NASA Summer Faculty Fellowship, NASA Jet Propulsion Laboratory (2003)
   - NASA Graduate Student Researcher Fellowship, NASA Goddard Space Flight Center (2001)
   - NASA Graduate Student Researcher Fellowship, NASA Goddard Space Flight Center (2000)
   - Best Poster Award, 18th International Liquid Crystal Conference, Sendai, Japan (2000)
   - Best Paper Award, 6th Asian Symposium on Information Display, Xi'an, China (2000)
   - Certificate of Special Congressional Recognition, US House of Representatives (2000)
   - Citation of Excellence, Rhode Island House of Representatives (2000)
   - NSF Summer Institute Fellowship, NTT Cyber Space Laboratories, Japan (2000)
   - NASA Graduate Student Researcher Fellowship, NASA Goddard Space Flight Center (1999)

8. **Service Activities:**
   - Co-Chair of Strategic Plan Phase 2 Task Force, Intensive Engagement for Students, Faculty and Professional Staff (2011–present)
   - Co-Director and Director of Research, ExCITe Center (2012–present)
   - Associate Dean for Undergraduate Affairs, Drexel University College of Engineering (2010 – present)
   - Member of College of Engineering Dean Search Committee (2010 – present)
   - Member of Council of Associate Deans (2010 – present)
   - Member of Middle States Accreditation Committee (2010 – present)
   - Member of University Assessment Committee (2010 – present)
   - Member of University AEFIS Implementation Committee (2010 – present)
   - Member of University iPad Innovations in Teaching, Learning and Assessment Project (2010 – present)
   - Senator, Drexel University Faculty Senate (2008–2012)
   - Member of Provost Task Force on Writing Across the Curriculum (2008 – present)
   - Chair of COE Undergraduate Curriculum Committee, (2010 - present)
   - Chair of COE Committee on Academic Standing (2010 – present)
   - Chair of COE Accreditation and Assessment Committee (2010–present)
   - Co-Director, A. J. Drexel Nanotechnology Institute (2005–present)
   - Faculty Advisor to IEEE Student Branch (2006–present)
9. **Most Important Publications & Presentations of the last 5 years**
   - ”Connecting Assessment to Teaching and Learning to Sustain Accreditation,” A. K. Fontecchio, D. McEachron, M. Sualp, and B. Joyce, *ABET Annual Symposium*, Indianapolis, IN, April 14-16, 2011.
   - S. K. Shriyan and A. K. Fontecchio, ”Analysis of effects of oxidized multiwalled carbon nanotubes on electro-optic polymer/liquid crystal thin films’” *Optics Express*, 18, 2484224852 (2010)
   - S. K. Shriyan and A. K. Fontecchio, Improved electro-optic response of polymer dis- persed liquid crystals dopes with oxidized multiwalled carbon nanotubes, *Molecular Crystals and Liquid Crystals*, Volume 525, January 2010 , pages 158 - 166
   - S. K. Shriyan and A. K. Fontecchio, ”Holographic electro-optic thin film stacks for airborne hyperspectral imaging,” *Proceedings of SPIE*, 7812, 78120S (2010).
   - N.J. Kirsch, N.A. Vacirca, E.E. Plowman, T.P. Kurzweg, A.K. Fontecchio, and K.R. Dandekar, Optically transparent conductive Polymer RFID Meandering Dipole Antenna, *Proceedings of IEEE International Conference on RFID*, 2009.
   - Fox, A. E., and Fontecchio, A. K., “Lineshape and morphology study of structures formed using a reconfigurable photomasking element*,” J. Micro/Nanolithography, MEMS, and MOEMS,* 7, issue 3, 033007 (2008).
10. **Most recent Professional Development Activities**
   - Attended ABET Annual Meeting in St. Louis, MO, April 2012
   - Attended ABET Annual Meeting in Indianapolis, IN, April 2011