[A-3]COURSE SYLLABUS

1. Course Description (Approximately 100 words)

Solid materials have been conveniently grouped into three basic categories: metals, ceramics, and polymers, a scheme based primarily on chemical makeup and atomic structure. Most materials fall into one distinct grouping or another. In addition, there are the composites that are engineered combinations of two or more different materials. A brief explanation of these material classifications and representative characteristics is offered next. Another category is advanced materials—those used in high-technology applications, such as semiconductors, biomaterials, smart materials, and nano engineered materials.
Metals are composed of one or more metallic elements (e.g., iron, aluminum, copper, titanium, gold, nickel), and often also nonmetallic elements (e.g., carbon, nitrogen, oxygen) in relatively small amounts.
Ceramics are compounds between metallic and nonmetallic elements; they are most frequently oxides, nitrides, and carbides.

2. Course Goals and Objectives (Approximately 100 words)

Why do we study materials? Many an applied scientist or engineer, whether mechanical, civil, chemical, or electrical, is at one time or another exposed to a design problem involving materials, such as a transmission gear, the superstructure for a building, an oil refinery component, or an integrated circuit chip. Of course, materials scientists and engineers are specialists who are totally involved in the investigation and design of materials.
Many times, a materials problem is one of selecting the right material from the thousands available. The final decision is normally based on several criteria. First, the in-service conditions must be characterized, for these dictate the properties required of the material. On only rare occasions does a material possess the maximum or ideal combination of properties. Thus, it may be necessary to trade one characteristic for another. The classic example involves strength and ductility; normally, a material having a high strength has only a limited ductility. In such cases, a reasonable compromise between two or more properties may be

3. Textbook (Title, Author, Publisher, Year of Publication, etc.)

Umarov E.O. Materialshunoslik. Darslik. -T.: “ CHo ‘ lpon ” . 2014.
Norxudjaev F.R. Materialshunoslik. Darslik. - T.: Fan va texnologiyalar. 2014.
Umarov E.O. “ Materialshunoslik ” o ‘ quv fanidan laboratoriya va amaliyot ishlari o ‘ quv qo ‘ llanmasi. -T.: “ Iqtisod-Moliya ” , 2015.
Umarov E.O. “ Konstruksion materiallar texnologiyasi ” o ‘ quv fanidan laboratoriya va amaliyot ishlari o ‘ quv qo ‘ llanmasi. - T.: “ Tafakkur bo ‘ stoni ” , 2015.

4. Reference

Mirboboev V.A. “ Konstruksion materiallar texnologiyasi ” Darslik. - T.: “ O ‘ zbekiston ” , 2004.
Nosir I. Materialshunoslik. Darslik. - T.: “ O ‘ zbekiston ” , 2002.

5. Course Requirements and Grades

Course prerequisites:
Students should have some background in Chemistry, Mathematics, Physics.
Grading System:
Homework 15%
Design Project 15%
Mid-term Exams 35%
Final Comprehensive Examination 35%
Total 100%
5=86-100
4=71-85

6. Course Calendar

Week	Main Content
1	Metallarning ichki tuzilishi. Metallar strukturasi.
2	Metal va qotishmalarning xossalari. Faza diagrammasi.
3	Po ‘ lat va cho ‘ yanlar, ularning tasnifi, markalanishi. Faza o ‘ zgarishlari
4	Po ‘ latlarni kimyoviy-termik ishlash. Materiallar turi va ularni qo ‘ llash sohas
5	a xossali po ‘ latlar. Rangli metallar. Nometall materiallar va ularning qo ‘ lla
6	Keramik materiallar. Polimer materiallari.
7	Dielektriklar, yarim o ‘ tkazgichlar va o ‘ tkazgichlar. Magnitli materiallar.
8	Kompozitsion materiallar. Nanotexnologiya asosida olingan materiallar.
9	Injinerlik materiallari qora metallar. Metalurgiya asoslari .
10	k asoslari. Quyma olish usullari. Payvandlash asoslari. Yoy payvandini maxs
11	rmo-mexanik va mexanik payvandlash. Metallarni bosim bilan ishlash asosla
12	‘ alash. Shtamplash. Metallarni qirqib ishlash asoslari. Qirqib ishlashning fiz
13	ohlar. Klassifikatsiyasi, belgilanishi. Metall emas materiallardan buyumlar ya
14	materiallardan buyumlar tayyorlash. Materiallarni elektro-fizik va elektro-ximik