

Introduction to Biomaterials

Lecture No.	Title	Speaker	Video Lecture Link	Text Document Link	Views
1	Introduction to basic concepts of Biomaterials Science; Salient properties of important material classes	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=yZKdFVAJcrE&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv&index=1&spfreload=10 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials#	http://textofvideo.nptel.iit.ac.in/113104009/lec1.pdf	4475
2	Manufacturing and properties of metals, ceramics, polymers and composites	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=Wt3s9z0seeI&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv&index=2 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/2	http://www.freestudy.co.uk/HNC%20MATERIALS%20UNIT%2021/1t3.pdf	1342
3	Concept of biocompatibility, Structure and properties of biological cells	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=VU3gihR-RaQ&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv&index=3 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/3	http://www.bioen.utah.edu/faculty/pat/Courses/biomaterials/BiologicalResponse.pdf	816
4	Structure and properties of cells, Proteins and cellular adaptation process	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=Q9GeiT5Y_qQ&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv&index=4 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/4	http://www.newagemedical.org/celldeath-injury-link2.pdf	634
5	Cell Communication-I	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=Vj1xE5FUMI&index=5&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/5	http://www.axopub.com/Downloads/Cells/14_Signaling.pdf	384
6	Cell Communication-II	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=zmBF2WCYzuo&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv&index=6 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/6	http://home.ku.edu.tr/~okeskin/Biol200/chapter16.pdf	298
7	Cell Migration, Cell Division and Cell Death	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=6DnUBNom_QI&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv&index=7 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/7	http://dev.biologists.org/content/136/14/2403.full.pdf	380

8	Cell Differentiation and Cell Death	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=APjuElv8fg&index=8&list=PLgFamY19tu7q1BKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/8	http://ac.els-cdn.com/S0962892414001421/1-s2.0-S0962892414001421-main.pdf?_tid=95046098-4ff0-11e5-952e-00000aab0f6b&acdnat=1440936584_6cc177762357879baa03efcd0c31994f	310
9	Cell Apoptosis - I	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=0TeMWgIiUkA&index=9&list=PLgFamY19tu7q1BKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/9	https://lifescience.roche.com/wcsstore/RASCatalogAssetStore/Articles/05242134001_05.08.pdf	262
10	Cell Apoptosis - II	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=v38KxphV0Ro&index=10&list=PLgFamY19tu7q1BKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/10	https://www.bdbiosciences.com/documents/webinar_2010_06_cell_prolif_&_apoptosis.pdf	228
11	Structure and properties of Protein; Cell – material interaction	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=gFs6glxm-uo&index=11&list=PLgFamY19tu7q1BKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/11	http://info.tuwien.ac.at/werkstoffkunde/VO_Biomaterials/meyers_chem_et_al_progmatsci_compr_6.0a.pdf	325
12	Assessment of biocompatibility of biomaterials	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=GC83qSKWgBs&list=PLgFamY19tu7q1BKz50mYdgaOHwIwRT6Fv&index=12 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/12	http://medind.nic.in/taat/02/i2/taat02i2p20.pdf	273
13	Biological testing(Hemocompatibility, tribological testing)	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=tx5KbkOlris&list=PLgFamY19tu7q1BKz50mYdgaOHwIwRT6Fv&index=13 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/13	https://www.ec.gc.ca/faunescience-wildlifescience/default.asp?lang=En&n=0BB80E7B-1	266
14	Structure and properties of bone as well as in vivo testing and his to compatibility assessment	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=VGWsZepDEJY&list=PLgFamY19tu7q1BKz50mYdgaOHwIwRT6Fv&index=14 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/14	http://www.ecmjournal.org/journal/papers/vol013/pdf/v013a01.pdf	282
15	Important Biometallic alloys	Dr. Kantesh Balani	https://www.youtube.com/watch?v=zbzxcPCA0ZQ&list=PLgFamY19tu7q1BKz50mYdgaOHwIwRT6Fv&index=15 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/15	http://medind.nic.in/taat/05/i2/taat05i2p141.pdf	278

16	Ti Alloy	Dr. Kantesh Balani	https://www.youtube.com/watch?v=sFN09gGHWRY&index=16&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/16	http://www.msm.cam.ac.uk/ph ase-trans/2000/C9/lecture3.pdf	240
17	Co-Cr-Mo Alloys	Dr. Kantesh Balani	https://www.youtube.com/watch?v=vZCb99Y8gY8&index=17&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/17	http://www.arcam.com/wp-content/uploads/Arcam-ASTM-F75-Cobalt-Chrome.pdf	242
18	Bioceramics	Dr. Kantesh Balani	https://www.youtube.com/watch?v=4S_mRhfrPY&index=18&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/18	http://unhas.ac.id/tahir/BAHAN-KULIAH/BIO-MEDICAL/NEW/HANBOOK/13_Bioceramics.pdf	228
19	Processing of Bioceramics	Dr. Kantesh Balani	https://www.youtube.com/watch?v=W5WGjMLfgVk&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv&index=19 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/19	http://www.antonio.lieciulli.unisalento.it/lezioni/bioceramics.pdf	218
20	Ceramics, Bioceramics and Glasses	Dr. Kantesh Balani	https://www.youtube.com/watch?v=7Kbqg0UxAuk&index=20&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/20	http://medind.nic.in/taa/t04/i1/taat04i1p9.pdf	306
21	Sintering and mechanical properties of ceramics	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=4QRobjlWMyk&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv&index=21 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/21	http://www.scielo.br/pdf/ce/v57n344/13.pdf	257
22	Fracture and toughening of ceramic composites	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=UFnMEvKWEfY&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv&index=22 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/22	http://nptel.ac.in/courses/112107085/module6/lecture2/lecture2.pdf	204
23	Development of hydroxyapatite based bioceramic composites for hard tissue replacement	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=-kf7-h4l-JM&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv&index=23 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/23	http://web.hku.hk/~memwang/files/cm01/Biomats_24(2003)_2133-2151.pdf	203

24	Alternative phosphate materials Hap-based composites with bactericidal property and glass ceramics for dental restoration	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=iAtyUUi4WTU&index=24&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/24	http://cdn.intechopen.com/pdfs/23619/InTech-Development_and_applications_of_varieties_of_bioactive_glass_compositions_in_dental_surgery_third_generation_tissue_engineering_orthopaedic_surgery_and_as_drug_delivery_system.pdf	209
25	Electrostatic spraying of UHMWPE-HA-CNT Biocomposite	Dr. Kantesh Balani	https://www.youtube.com/watch?v=TZEJdYn39mw&index=25&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/25	http://www.researchgate.net/publication/269930333_Processing_and_Mechanical_Characterization_of_Compression-Molded_Ultrahigh_Molecular_Weight_Polyethylene_Biocomposite_Reinforced_with_Aluminum_Oxide_INTRODUCTION	150
26	Thin Films & Coatings	Dr. Kantesh Balani	https://www.youtube.com/watch?v=dIQz_aSOWnU&index=26&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/26	http://drdo.gov.in/drdo/pub/moonographs/Introduction/Thin_Films_brief.pdf	297
27	Thermal Spray Coatings	Dr. Kantesh Balani	https://www.youtube.com/watch?v=0Al_2aqtKCg&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv&index=27 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/27	http://www.upc.edu/sct/es/documentos_equipment/d_324_id-804-2.pdf	158
28	Biocompatibility of Plasma Sprayed Carbon nanotube Reinforced Hydroxyapatite Bioceramic Coating	Dr. Kantesh Balani	https://www.youtube.com/watch?v=n4oPTLNN-Fg&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv&index=28 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/28	http://www.researchgate.net/profile/Arvind_Agarwal4/publication/6786636_Plasma-sprayed_carbon_nanotube_reinforced_hydroxyapatite_coatings_and_their_interaction_with_human_osteoblasts_in_vitro/links/0912f50b4266cc5331000000.pdf	183
29	Biocompatibility of Alumina & Carbon Nanotube Reinforced Hydroxyapatite	Dr. Kantesh Balani	https://www.youtube.com/watch?v=uzvq6zAQ1Hk&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv&index=29 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/29	http://web.eng.fiu.edu/agarwala/PDF/2012/11.pdf	184
30	Glass-ceramics for dental restoration applications	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=13S9F5uwbXs&index=30&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/30	http://cdn.intechopen.com/pdfs/wm/29784.pdf	146
31	Structure and properties of polymers	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=jhZsTuLe8Gk&index=31&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/31	http://authors.library.caltech.edu/25034/30/BPOCchapter29.pdf	213

32	Biodegradable Polymers	Dr. Kantesh Balani	https://www.youtube.com/watch?v=Jr8QG14FWNo&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv&index=32 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/32	http://www.usask.ca/chemistry/groups/scott/334/Seminars/BiodegradablePolymers_Robin.pdf	243
33	Biodegradable Polymers	Dr. Kantesh Balani	https://www.youtube.com/watch?v=iBkWz7XIsEM&index=33&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/33	http://cdn.intechopen.com/pdfs-wm/45095.pdf	198
34	Mechanicsm of Bioerosion	Dr. Kantesh Balani	https://www.youtube.com/watch?v=9MhclYORAPg&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv&index=34 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/34	http://biophysics.sbg.ac.at/transcript/bioeros.pdf	193
35	External field and cell – material interaction	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=DMbHD_PlrNY&index=35&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/35	http://www.iitk.ac.in/biomaterialslab/E%20feild.pdf	159
36	Tissue Engineering and Wound healing	Prof. Bikramjit Basu	https://www.youtube.com/watch?v=qejLJ2o3bvo&index=36&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/36	http://www.kumc.edu/Documents/msctc/Wong%20Exp%20Dermatol.%202012.pdf	221
37	Understanding Design Concepts of Bio-Implants	Dr. Kantesh Balani	https://www.youtube.com/watch?v=e06xjQorfg0&index=37&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/37	http://www.ias.ac.in/sadhana/Pdf2003JunAug/Pe1108.pdf	169
38	Understanding Design Concepts of Dental-implants(Tooth Replacement)	Dr. Kantesh Balani	https://www.youtube.com/watch?v=HA4L6Ym4hjl&list=PLgFamY19tu7qIBKz50mYdgaOHwIwRT6Fv&index=38 & http://freevideolectures.com/Course/3086/Introduction-to-Biomaterials/38	http://www.dentalcare.com/media/en-US/education/ce420/ce420.pdf	177