

COURSE CODE	COURSE TITLE	L	T	P	C
1152BM112	REHABILITATION ENGINEERING	3	0	0	3

COURSE CATEGORY: CORE

PREAMBLE

Rehabilitation engineering will provide knowledge to design rehabilitation aid and apply them with confidence to help the challenged people.

PREREQUISITE

Basic knowledge of human anatomy and physiology

LINKS TO OTHER COURSES

Diagnostic and therapeutic Equipment's

CO Nos	Course Outcome	Skill Level
CO1	Explain the need of Rehabilitation Engineering	K2
CO2	Explain different types of Therapeutic Exercise Techniques	K2
CO3	Design of various orthotic & prosthetic devices in healthcare	K3
CO4	Explain the various assistive technology used for vision	K2
CO5	Design of different types of Hearing and Speech aids	K3

CO-PO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	M	M	H											
CO2													M	
CO3			H			M			M			M	H	
CO4			H			M							H	
CO5			H			M			M			M	H	

UNIT I INTRODUCTION TO REHABILITATION ENGINEERING 9

What is Rehabilitation, Medical Rehabilitation, Preventive Rehabilitation, Impairment disability and handicap, Socio-vocational Rehabilitation, Rehabilitation team, Delivery of Rehabilitation care, Community Based Rehabilitation (CBR).

UNIT II THERAPEUTIC EXERCISE TECHNIQUE 9

Co-ordination exercises, Frenkel's exercises, Gait analyses-Pathological Gaits, Gait Training, Relaxation exercises-Methods for training Relaxation, Strengthening exercises-Strength training, Types of Contraction, Mobilisation exercises, Endurance exercises.

UNIT III - ORTHOTIC & PROSTHETIC DEVICES

9

Anatomy of upper & lower extremities, Classification of amputation types, Prosthesis, Components of upper limb prosthesis, Fabrication of prosthesis, Components of lower limb prosthesis ,Orthoses, types – Lower extremity- and upper extremity orthoses .

UNIT IV – VISUAL AIDS 9

Anatomy of eye, Categories of visual impairment, Cortical & retinal implants, Ultrasonic and laser canes, Intra ocular lens, Braille Reader, Tactile devices for visually challenged, Text voice converter, screen readers.

UNIT V AUDITORY AND SPEECH ASSIST DEVICES

9

Anatomy of ear, Types of deafness, hearing aids, application of DSP in hearing aids, Cochlear implants, Voice synthesizer, speech trainer.

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Sunder 'Textbook of Rehabilitation', Jaypee Brothers Medical Publishers Pvt. Ltd, New Delhi, 2nd Edition, Reprint 2007
2. Joseph D.Bronzino, The Biomedical Engineering Handbook, Third edition-3 volume set, Taylor & Francis, 2006
3. Rory A Cooper, HisaichiOhnabe, Douglas A Hodson, "An Introduction toRehabilitation Engineering", CRC Press, First edition, 2006.

REFERENCES:

1. Horia- NocholaiTeodorecu, L.C.Jain ,Intelligent systems and technologies in rehabilitation Engineering; CRC; December 2000.
2. Keswick. J., What is Rehabilitation Engineering, Annual Reviews of Rehabilitation-Springer- Verlag, New York, 1982.
3. Warren E. Finn,Peter G. LoPresti; Handbook of Neuroprosthetic Methods CRC; edition 2002.
4. Levine.S.N.Editor, Advances in Bio Medical Engineering and Medical Physics, Inter University Publication, New York 1968.
4. Albert M.Cook and Webster J.G, Therapeutic Medical devices, Prentice Hall Inc., NewJersy,1982.
- 5.Reswick.J, What is Rehabilitation Engineering, Annual review of Rehabilitation-volume2, Springer-Verlag, New York 1982.