

2. Radhey Lal and Datta, A.C. (1978). *Problems in Agricultural Engineering*. Sathya Prakashan, Allahabad
3. RNAM . (1955). *Test codes and Procedure for farm machinery*
4. Barger, E.L., Liledahl, J.B., Carleton, W.M. and Mckibben, E.G. (1978). *Tractor and their power units*. Wiley Eastern pvt. Ltd, New York
5. [http://ecourses.iasri.res.in/e-Learning/download3\\_new.aspx?Degree\\_Id=04](http://ecourses.iasri.res.in/e-Learning/download3_new.aspx?Degree_Id=04)
6. <http://www.agmanager.info/farmmgt/machinery/mf2244.pdf>
7. <http://www.un-csam.org/Activities%20Files/A1310qingdao/7.pdf>

IV Year II - Semester

L	T	P	To	C
4	0	-	4	4

## AG416 Human Engineering and Safety

### Course Description & Objectives:

To impart the fundamental knowledge to the student on the importance of human engineering and safety in the field of agriculture machinery.

### Course Outcomes:

At the completion of the course the student will:

1. understand the importance of human factors and their application in system development.
2. know the effect of visual, auditory and factual displays in human performance.
3. understand the importance of optimum work-rest cycles in endurance.
4. be able to ideally design the work space in accordance to anthropometry.
5. have the general understanding safety features and regulation acts in farm machinery.

### Unit 1: Human Factor:

Human factors in system development – concept of systems; basic processes in system development, performance reliability,

### Unit II: Human Performance:

Human performance. Information input process, visual displays, major types and use of displays, auditory and factual displays. Speech communications.

**Unit III: Human Controls:**

Biomechanics of motion, types of movements, Range of movements, Strength and endurance, speed and accuracy, human control of systems. Human motor activities, controls, tools and related devices.

**Unit IV: Introduction to Anthropometry:**

Anthropometry: arrangement and utilization of work space, atmospheric conditions, heat exchange process and performance, air pollution.

**Unit V: Safety of Human:**

Dangerous machine (Regulation) act, Rehabilitation and compensation to accident victims, Safety gadgets for spraying, threshing, Chaff cutting and tractor & trailer operation etc.

**TEXT BOOKS:**

1. Ernest and Mc Cormick, E.L. (1970). *Human factors in engineering and design*. Mc Graw Hill Co., New York.
2. Grandjean, E. (1988). *Fitting the task to the man*. Taylor and Francis, London.

**REFERENCES:**

1. Liljedhal, J.B, Carleton, W.M, Smith, P.K and David, M. (1978). *Tractors and power units*. John Wiley and sons, New York.
2. Murrel, K.H.F. (1978). *Ergonomics, Man in his working environment*. Chapman and Hall, London.
3. Astrand, O.P and Rodhal, J. (1977). *Work Physiology*. Mc Graw hill Co. New York.
4. [https://www.faa.gov/regulations\\_policies/handbooks\\_manuals/aviation/risk\\_management/ss\\_handbook/media/Chap17\\_1200.pdf](https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/risk_management/ss_handbook/media/Chap17_1200.pdf)
5. <http://www.derby.ac.uk/online/course/ergonomics-msc>
6. <http://www.online.colostate.edu/certificates/ergonomics/>
7. <http://www.cdc.gov/nchs/data/nhanes/nhanes3/cdrom/nchs/manuals/anthro.pdf>