Ergonomics for beginners Industrial design Perspective

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Module No. # 08

Ergonomic design process

Lecture No. # 31

Ergonomics Design Methodology

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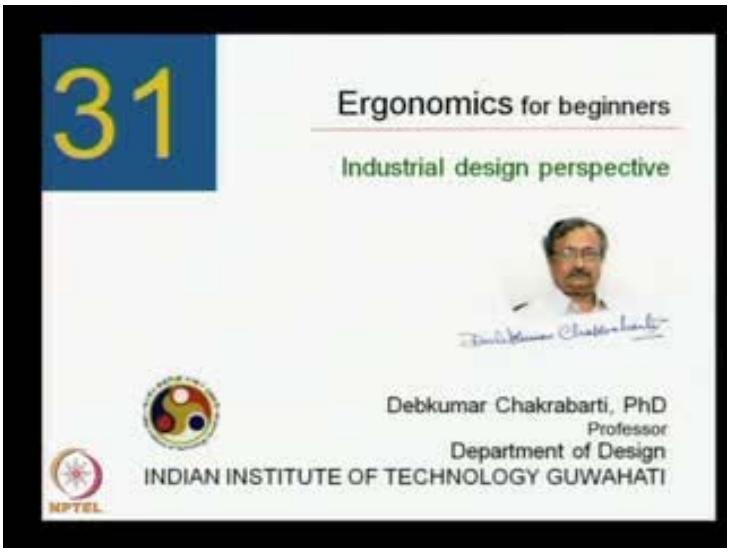

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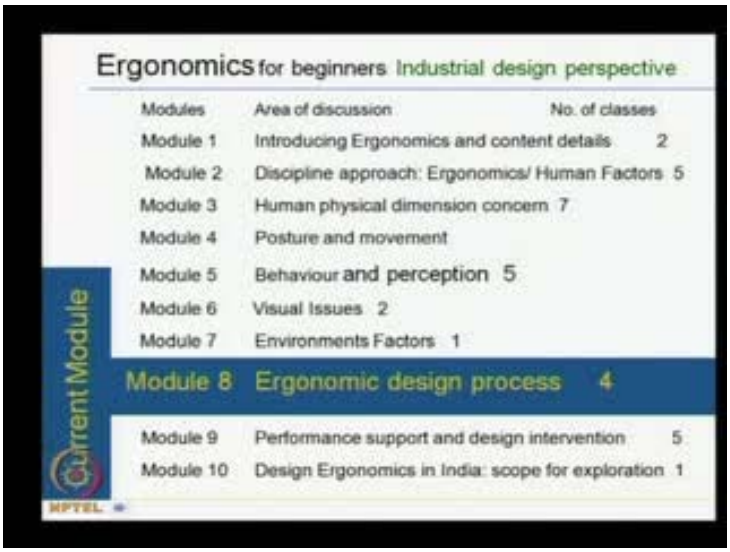

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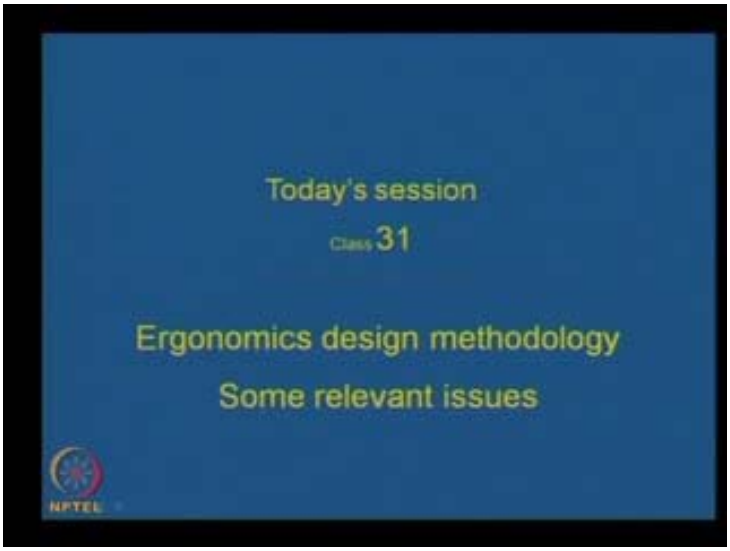

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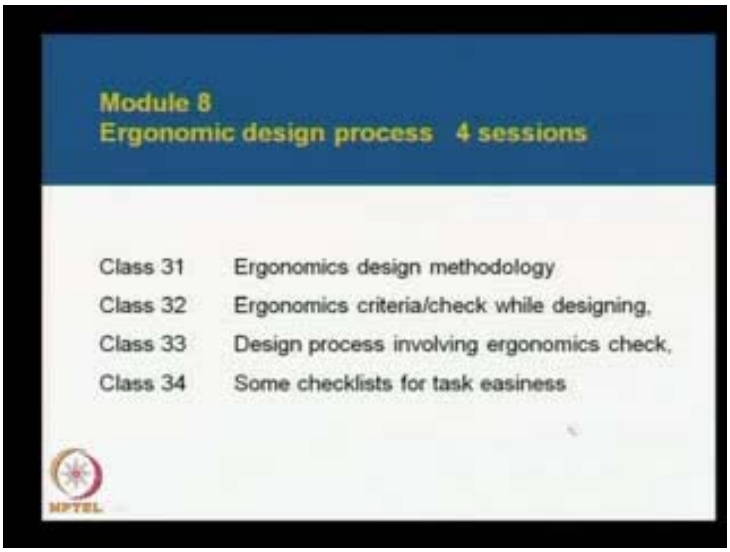

Welcome to this 31 session of ergonomics for beginners industrial design perspective. So, the current module is module number 8; that is in this we have total 4 sessions and with that 4 sessions: the class number 31 is today's ergonomics design methodology class; 32 - ergonomics criteria and check while designing; class number 33 - design process involving ergonomics check; and class number 34 - some check lists for task easiness and design applications.

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So, today's session is about the class 31 Ergonomics design methodology, some relevant issues. Now, if we see some aspects of human factors in design, while speaking this the first thing comes that is the nature and manmade world, the inter relation between these two designs has come from art and design. So, we can say that a design is a perfect blend of aesthetic perception and functionality.

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Now, this aesthetic perception and functionality it depends on the human nature, the human perception to look into natural resources to use for his own benefit and for that a

word comes in our mind, that is - sustainability. Sustainability, in one sense, it can be said that borrowing from future for present use.

Sustainable development in one, in another sense it can be said that when an egg, a force is applied from outside, the egg breaks, it kills a life; when that force, that energy comes from inside, the egg breaks, but it gives a life. So, the sustainability would be in such a way, that the development should not be given to the users, the development process should involve the users itself, so that they can give the proper feedback about what the necessity and how they can continue, it is users.

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Now, we can say that when we see something either in nature or the manmade world, the appreciation depends on the ambience and mood. Where are we going to use these things and what is the interrelation between them? This figure says that in this context some specific thought comes in our mind that is not possible to think in this figure, in this ambience.

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Then, again in this figure, what do we see? Some people are fishing with boat, design requirement, etcetera, whatever we think after seeing this figure, the design thought

comes it has to be related to this figure. So, whatever we perceive according to the ambience, it gets into that.

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Now, in this case, that is tea garden case, here after seeing this figure, totally different type of atmosphere or that need of or any design cannot come into our mind; so, while seeing this figure, our mind goes into that and we can think of something that is related to this fairly. So, it is said that ambience depends on appreciation of some appearance, it depends on the ambience and then it creates the mood accordingly.

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Now, in this figure, in this mustard field, a similar type of atmosphere has been created. Here, in this picture it is said - background and highlight, in this jungle background, the highlight of this portion, it becomes lively. So, with this, some specific identity of an area, of an environment, it gives a clue how do use it in design, so that it can be that environment friendly or it can represent that environment.

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In this figure, we can say that after studying the whole atmosphere and identified portion of that, may lead the need, that need means it can be represented in a design item, so that an identity can be created.

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After seeing this, it is said that it is not usability, but it is that these products are not for daily use; these products are for just to appreciate. So, some product may be categorized that whether it is only for appreciation or for utility value or it has both; if both are there, then it would be successful to create an ambience, mood, use value, as well as people will like to possess those things.

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Now, from this figure, it says a lot of things. In this case, the need is different; this need we can say from the organization point of view, the environment butification as a whole, overall organization of obvious things with a tourism, etcetera, the route of this boating or this water body information signage, etcetera, and then the resting locations and the shops, and etcetera. So, in this the whole area is under the organizational point of view.

But from the end users point of view, here end users are these are the end users (Refer Slide Time: 07:39). In this figure it says, so now the From the end users point of view the need is different. Like the owner of this boat, his need is different - as many as people he can accommodate in this boat; so while designing this boat, these will be his requirement need; but whereas the passengers, users, other users, the need is different, their comfort, safety, etcetera.

Among these as group it is also different; those who have already used it and those who were about to use that facility, their thoughts are also different. For an example, same tourist group but their need or that a depth moment, their thought is different with same boat design respect.

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So, the context specific design application is necessary; the appreciation depends on the perception, emotion, satisfaction and possessiveness of that feel. Now, a perception of appreciation if you want to see - this is a figure, a lake surrounded by some hill area, it looks very nice, so aesthetic and pleasant in this figure, but to be seen and enjoyed from a distance, then only the as a whole the view gives an appreciable appearance, but not for personal possession, overall appearance to be appreciated.

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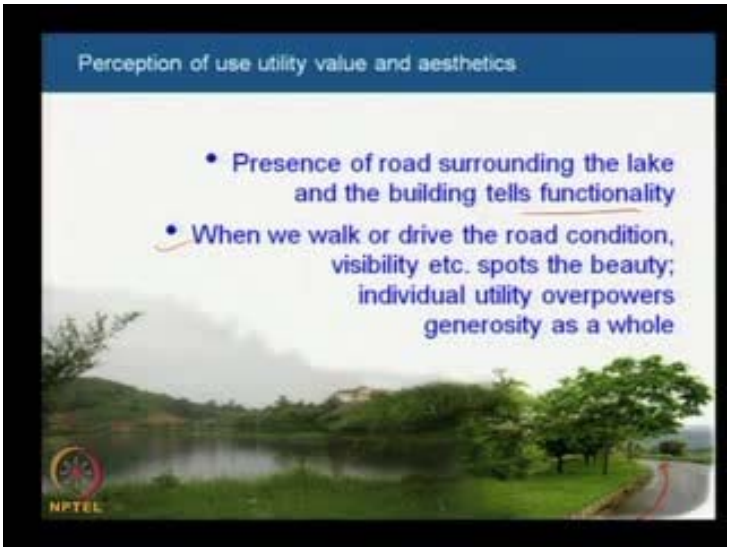

Now, if we see from different angle, in the same figure a building is there and road surrounded, this surrounds this lake, road here (Refer Slide Time: 10:35). You are supposed to see this building for your stay and road for walking or driving, the total perception changes. Presence of road surrounding the lake and the building tells us the functionality aspect of this picture.

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When we talk, when we walk or drive the road condition, visibility, etcetera, spots the beauty individual utility overpowers generosity as a whole. So, the perception of use utility value and aesthetics, we not only feel product through physical senses but filter through the mind also. In what state of mind, we are in an angry mood if something is very soft or something is presented to him, it may not be accepted at that point.

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A good product should satisfy a set of human factors and many of them are utility oriented and pleasure for possession. When we see an object, we judge how it is trust worthy to use or to reject it. The design should be need based and context specific; as an example, it can be said that a thirsty man does not feel comfortable with an elegant picture of lake or a fountain or a modern design of a water purifier alone, he needs a glass of water to drink, but as value addition can be used these as image to the product of desire.

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Identification of need and value addition would be the product innovation and development strategy. This figure, it talks a lot about the owner; after seeing this figure, few persons can feel - from where it is taken? Who can use this? Where it is? What state of people they are? So many things come. Pictorial presentation, it keeps a lot into the single image; so, to identify certain things like this, it would be necessary and it can be presented in design.

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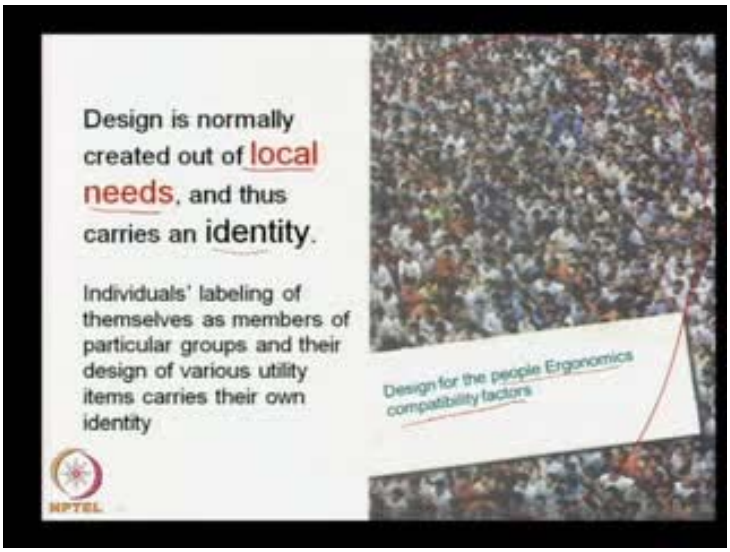

Design is normally created out of local needs and thus carries an identity. In this population group, design for the people ergonomics comparability factors of for this the local needs and identity is one of the factor that requires to be satisfied.

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An individual's leveling of themselves as members of particular groups and their design of various utility items, carries their own identity. Design innovations take traditional elements and modern technological advantages to meet contextual needs are to satisfy intended users. Use of color, lines, surface texture, form, shapes, etcetera and design elements create moods as well as functional utility items, identity creates moods and functional identity.

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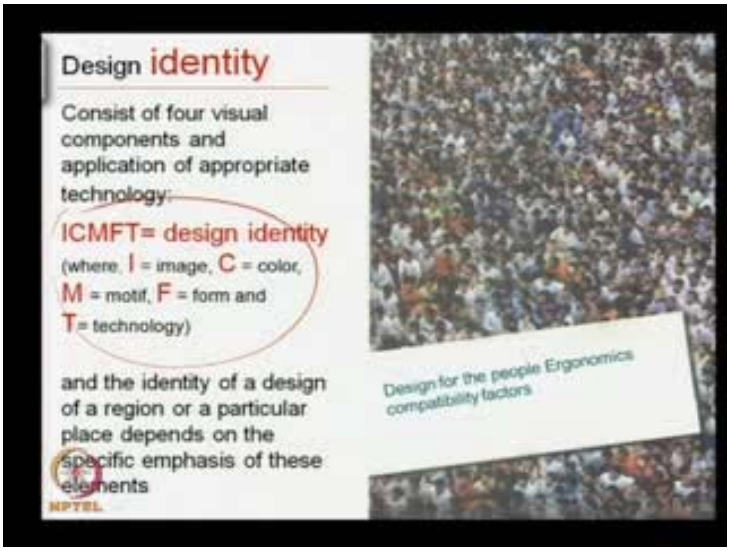

Now, why are we talking about design identity? The design identity consists of four visual components and application of appropriate technology. The four components and technology it can be said that: ICMFT is design identity where I is image, C is color, single color or shades or multicolor, motifs and F is the form and T is technology. So, based on the identity of a design of a region or a particular place, depends on the specific emphasis of these elements.

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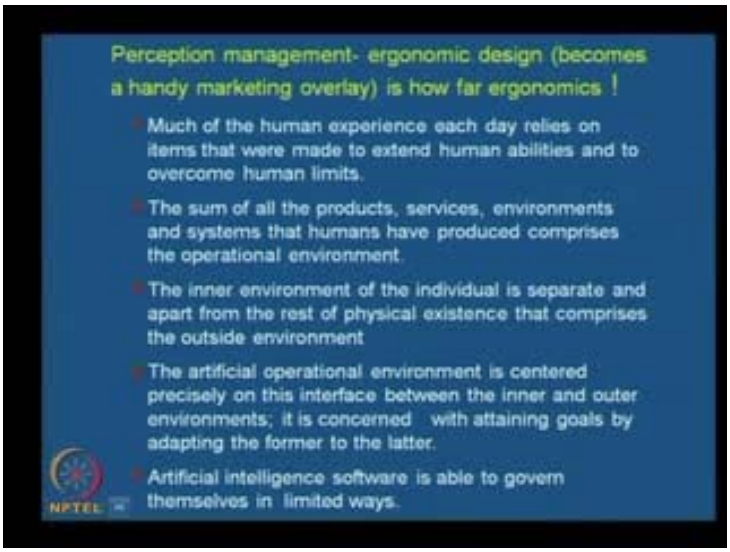

Thus, the identity of a product comes from its origin point of view also. Now, the perception management, where ergonomics design - becomes a handy market overly - is how for ergonomics - that is the question that comes. Now, much of the human experience each day relies on items that were made to extend human abilities and to overcome human limits. The sum of all the products, services, environments and systems that humans have produced comprises the operational environment.

The inner environment of the individual is separate and apart from the rest of physical existence that comprises the outside environment. The artificial operational environmental is centered precisely on this interface between the inner and outer environments; it is concerned with attaining goals by adopting the former to the latter. Artificial intelligent software is able to govern themselves in limited ways.

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Ergonomics provides product to sale; that is, business with humane ethics and an understanding of the basics of human behaviour and physiology in the context development of ways to recognize, approach, analyse and solve problems including methods for observation as well as simple experimentation. A means to determine why one solution is better than another. Cost-effectiveness: cost effectiveness is included to enable to priorities solutions alternatives according to their apparent value. A process for effective communicating development team interactions, activities and results are necessary.

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Now, ergonomics carries responsibility for designing for human use. Now, how can this goal be achieved? So, few aspects we may need to consider. This goal is reached by development of measuring protocols and experiments to study the interaction between man, product and surroundings. Interpretation of - biomechanical and physiological - parameters in relation to load, performance, health, safety and comfort. Understanding of - background - mechanisms causing health damage and performance involvement and improvement.

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Specification of directives for product design based on product research; that is, what is necessary and how it can be achieved? Ergonomics achieve, there will be two different types of approaches, like for the producer and suppliers point of view and the user's point of view. Now, for the producer and supplier point of view, the added value of product Ergonomics is the higher quality products. First-time-right product development - that is strategy. Time-to-market reduction means as soon as the idea comes, make it, put in a market, and the satisfied the customers, the feedback.

For the users of the products experience: fewer injuries while using those products or the design, injuries in terms of psycho-physical; better performance, it means reliability, trust, etcetera and more comfort while using; now comfort is an absolute word, so why do we require to call it more comfort? Because when we grade some products comfort ability, apparently it is seems all are comfortable; then, somewhere if we want to give

more better thing than one product, in that case we can say more comfort, but comfort itself is an absolute term.

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Now, application areas or this Ergonomics design, Ergonomics that in product research - material and product properties. Users research in the lab and on location where it will be used. Actually that context, whether it fits design and testing of new prototypes, it is required this application areas and while making this testing the feedback appropriate and those feedbacks if they are met in the new developments and obviously it will be well accepted.

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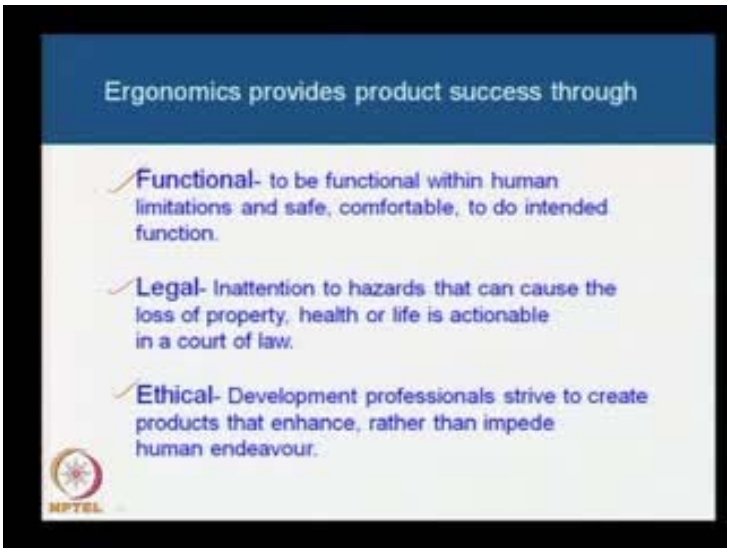

Now, some terms we always talk about when we take some design assignments. Now, Ergonomics provides product success through the functional aspects of the product; that is, to be functional within human limitations and safe, comfortable, to do the intended function of that product. The legal aspects - inattention of hazards that can cause the loss of property, health or life is actionable in a court of law. The ethical - the development professionals strive to create products that enhance, rather than impede human endeavor.

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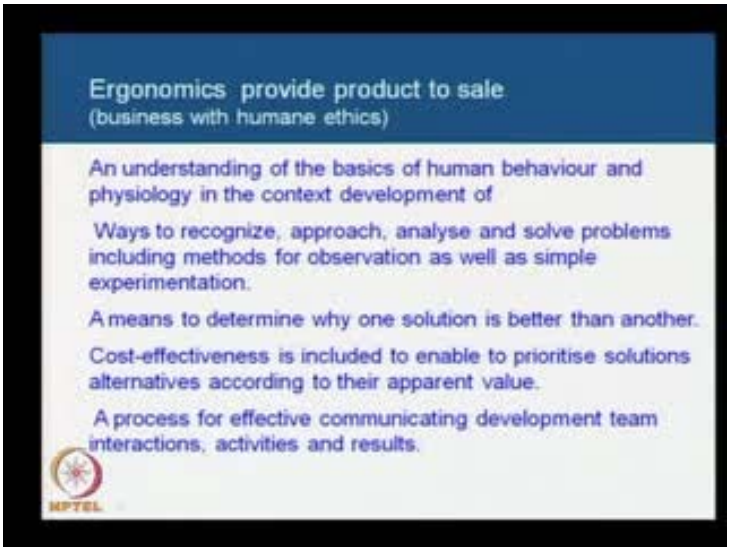

Ergonomics provide product to sale at a business with human ethics, and an understanding of the basics of human behavior and physiology in the context of development of ways to recognize, approach, analyse and solve problems including methods for observation as well as simple experimentation. This slide, we have just few minutes back we have discussed this in summary you can say again, a means to determine why one solution is better than another. Cost-effectiveness is included to enable to prioritize solutions alternatives according to their apparent value. A process for effective communicating development team interactions, activities and results.

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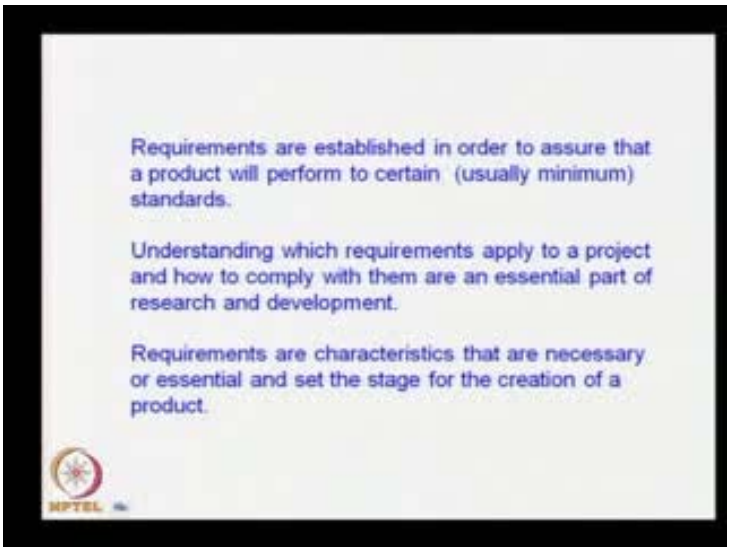

Requirements are established in order to assure that a product will perform certain - usually minimum - standards. Understanding which requirements apply to a project and how to comply with them are an essential part of research and development. Requirements are characteristics that are necessary or essential and set the stage for the creation of a product.

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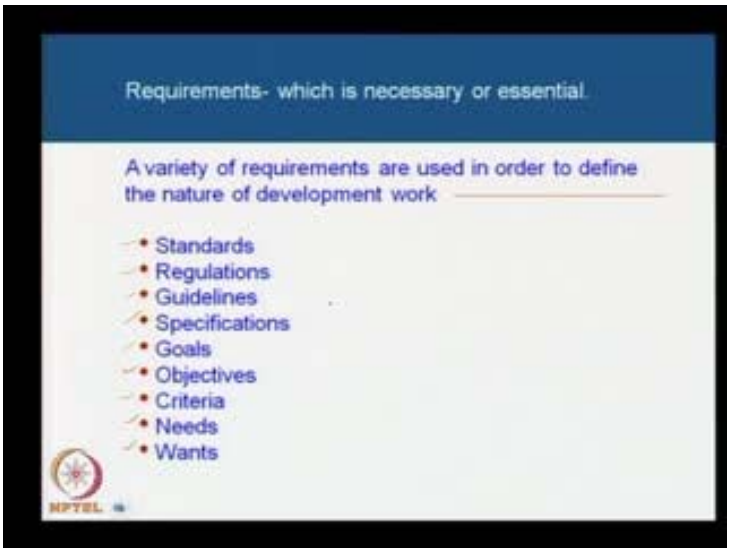

Now, about the requirements - which is necessary or essential under that; a variety of requirements are used in order to define the nature of development work and those are: standards, regulations, guidelines, specifications, goals, objectives, criteria, needs and wants. Now, what does it? those actually mean.

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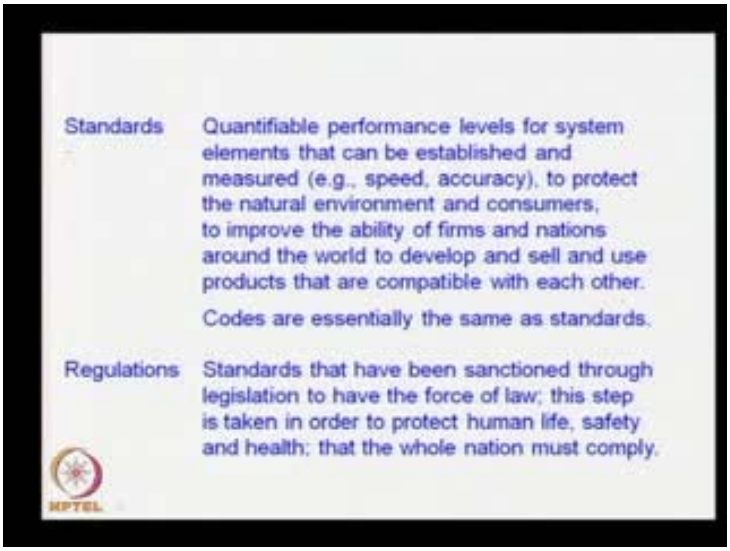

We can say that about the standards: the quantifiable performance levels for system elements that can be established and measured - as for as example, speed, accuracy, etcetera - to protect the natural environment and consumers, to improve the ability of

firms and nations around the world to develop and sell and use products that are compatible with each other. Codes are essentially the same as standards.

Regulations: the regulations are the standards that have been sanctioned through legislation to have the force of law; this step is taken in order to protect human life, safety and health; that the whole nation must comply. So, design attempts should consider all these issues.

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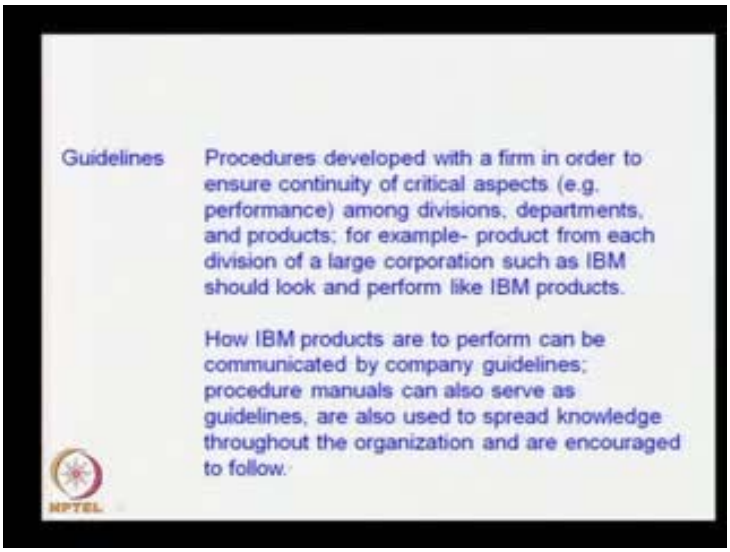

Now, the guidelines while designing; some guidelines are to be followed, what are those guidelines? The procedures developed with a firm in order to ensure continuity of critical aspects - as for as example the performance - among divisions, departments, and products; for example - product from each division of a large corporation such as IBM should look and perform like IBM products. How IBM products are to perform can be communicated by company guidelines; procedure manuals can also serve as guidelines, are also used to spread knowledge throughout the organization and are encouraged to follow.

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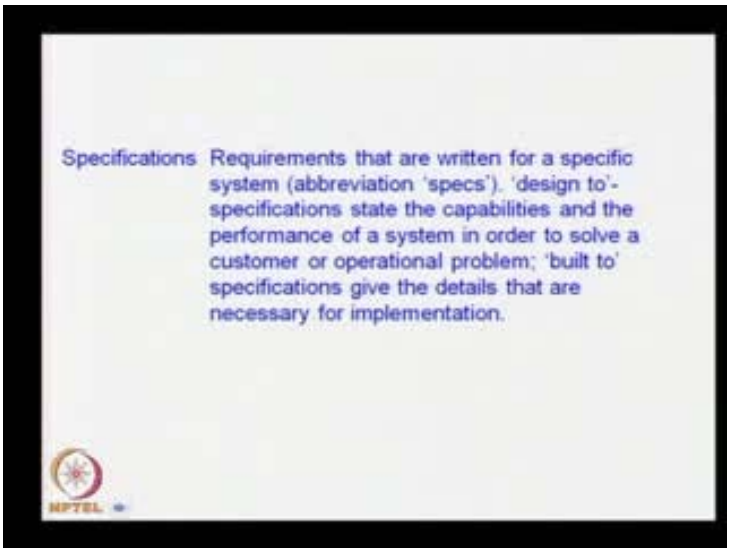

The specifications: it means the requirements that are written for a specific - abbreviation like specs, design to - specification state the capabilities and the performance of a system in order to solve a customer or operational problem; built to specifications give the details that are necessary for implementation.

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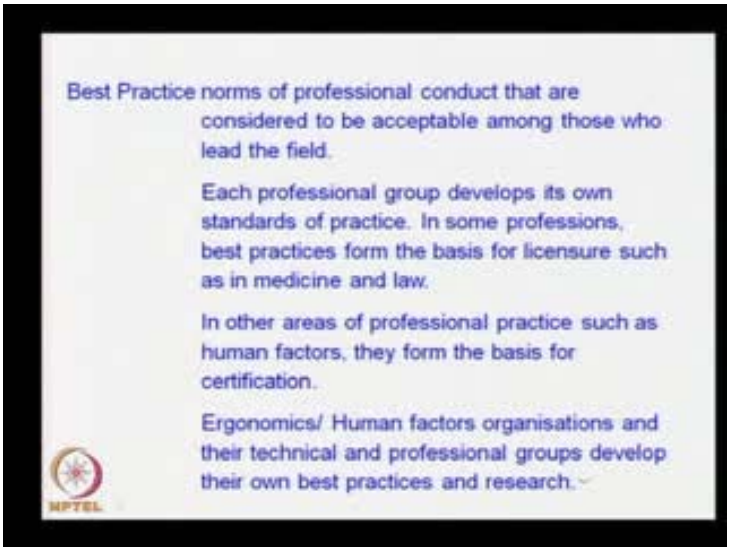

The best practice: the best practice norms of professional conduct that are considered to be acceptable among those who lead the field. Each professional group develops its own standard of practice. In some professions, best practices form the basis for licensure such

as a medicine and law. In other areas of professional practice such as human factors, they form the basis for certification.

Ergonomics and human factors organization and their technical and professional groups develop their own best practices and research and accordingly they use in their designs.

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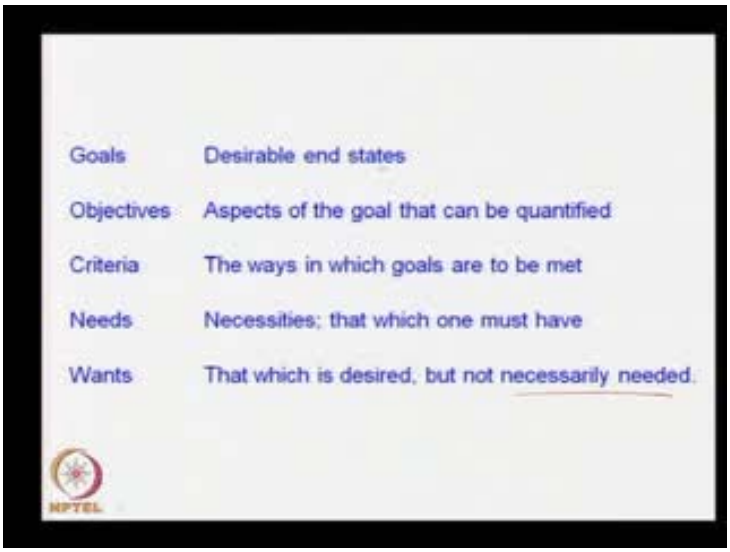

The goals - desirable end states; objectives - aspects of goal that can be quantified; the criteria - the ways in which goals are to be met; needs - necessities that which one must have in that design; wants - that which is desired, but not necessarily needed, these are the wants. If these issues are considered while conceptualizing a design idea of a product or a space or a utility item, then it will be accepted by the end users as well as the society as a whole and the profit will also be there.

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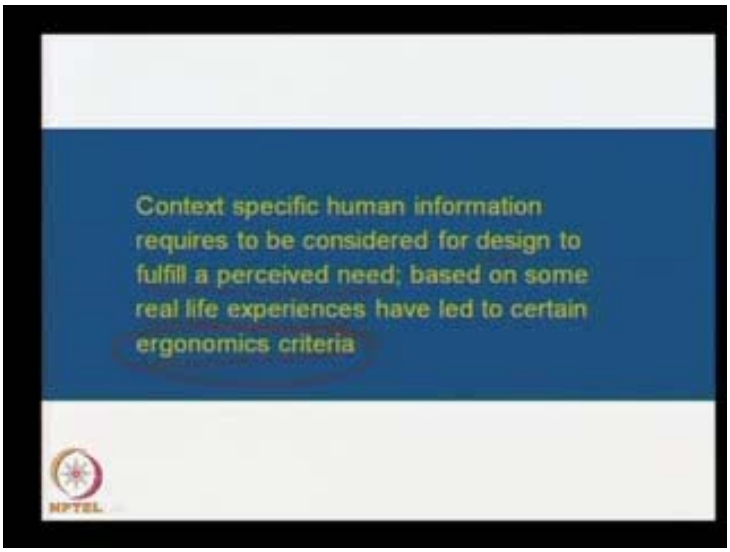

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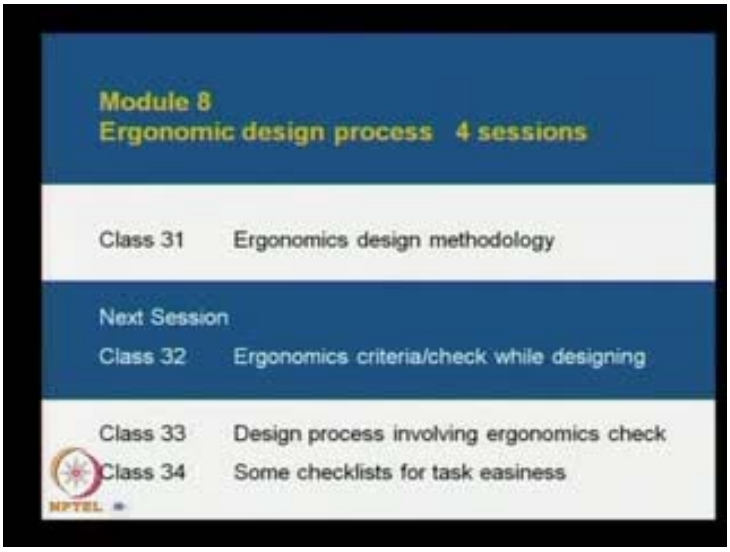

The context specific human information requires to be considered for design to fulfill a perceived need, based on some real life experiences that have led to certain ergonomics criteria and these ergonomics criteria based on some real life experiences; in next session we are going to discuss this in detail. The following other the rest of the classes there we will discuss these with some examples.

So, next session, the class number 32 - ergonomics criteria and check while designing, we are going to discuss in that session. Till then, thank you very much, wish to meet you next.

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