Subject Description Form

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>ITC4072T</th>
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<tbody>
<tr>
<td>Subject Title</td>
<td>Colour Management and Technology</td>
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<tr>
<td>Credit Value</td>
<td>3 credits</td>
</tr>
<tr>
<td>Level</td>
<td>4</td>
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<tr>
<td>Pre-requisite</td>
<td>ITC3025T Coloration and Finishing Technology</td>
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**Objectives**

This subject aims to provide students with in-depth knowledge in colour management and technology that is required in the processes of colour measurement and colour quality control. It also prepares students with extended knowledge and understanding of principles in colour communication and with emphasis on hands-on experience of computer colorant formulation and coloration process.

**Intended Learning Outcomes**

Upon completion of the subject, students will be able to:

a. Explain the fundamental principles of colour, its perception and measurement.

b. Describe the fundamental principles and instruments used in measuring and controlling the colour of textile material as well as the various factors which can affect the values so obtained.

c. Describe the methods and standards used to specify colour internationally and apply them to communicate colour information precisely.

d. Describe the Kubelka-Munk theory and its limitations as applied in modern computer colour formulation and evaluation of colour strength in dyeing.

e. Apply the appropriate systems and methodologies to perform colour management and colour quality evaluation in the textile and fashion industries and to solve associated problems.

**Subject Synopsis/Indicative Syllabus**

(I) **The basic concepts of light, object, and visual system**

Interaction of light and object, absorption, reflection, transmission, scattering, fluorescence and their relationship with colour. Interaction of light with visual system, introduction and detection of defective colour visions.

(II) **Metamerism, chromatic adaptation, colour constancy, colour rendering of light sources**

Concepts of illuminant metamerism and its detection; chromatic adaptation, colour constancy, and colour rendering properties of light sources and its influence on coloured objects.

(III) **Methods of colour specification, communication, and colour**
### measurement instrumentation

Three dimensional nature of colour, colour order systems, CIE standard illuminants and observers, CIE colour specification system, CIE uniform colour space, methods of colour communication. Instrumental colour measurement, calibration and operation; optical arrangements; sample presentations, precision & accuracy.

(IV) **Visual and instrument colour quality evaluation**

Visual colour quality evaluation and its requirements for light sources and viewing conditions; visual colour fastness evaluation; colour difference equations and its application in colour quality control; colour tolerance setting.

(V) **Quantitative analysis of colorants in dyeing processes**

Kubelka-Munk theory, its characteristics and limitations, modern computer colorant formulation, introduction of various methods for defining colour strength in dyeing and its applications.

### Teaching/Learning Methodology

Lectures will be augmented by appropriate handouts, references and visual materials. Tutorials will be given to solve problem and matters raised in lectures. Laboratory sessions give students hand-on experience of colour perception, visual and instrumental colour quality evaluation, colour management system, computer colorant prediction and coloration processes.

### Assessment Methods in Alignment with Intended Learning Outcomes

<table>
<thead>
<tr>
<th>Specific assessment methods/tasks</th>
<th>% weighting</th>
<th>Intended subject learning outcomes to be assessed (Please tick as appropriate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Exam</td>
<td>50%</td>
<td>a ✓ b ✓ c ✓ d ✓ e ✓</td>
</tr>
<tr>
<td>2. Course work</td>
<td>40%</td>
<td>a ✓ b ✓ c ✓ d ✓ e ✓</td>
</tr>
<tr>
<td>3. Attendance</td>
<td>10%</td>
<td>a ✓ b ✓ c ✓ d ✓ e ✓</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>a ✓ b ✓ c ✓ d ✓ e ✓</td>
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Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

Examination can provide information on students’ learning and their knowledge regarding to the subject, while coursework which is composed of mainly the laboratory work on modern ways of textile coloration can provide hands-on and practical experience to students to understand the subject matter more deeply. Attendance for both lecture and practical classes is important for student learning.

### Student Study Effort Expected

<table>
<thead>
<tr>
<th>Class contact:</th>
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<tbody>
<tr>
<td>Lecture</td>
<td>26 Hrs.</td>
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<tr>
<td>Studio</td>
<td>18 Hrs.</td>
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Other student study effort:

- Assignments 30 Hrs.
- Laboratory preparation, revision 29 Hrs.

Total student study effort 103 Hrs.

**Reading List and References**

**Essential**

**Supplementary**

**Periodicals**
Color Research and Applications, John Wiley, New York, USA.
Coloration Technology, the Society of Dyers and Colourists, United Kingdom.
AATCC review, the American Association of Textile Chemists and Colorists, North Carolina, USA.