Short Course Sponsored by GIAN MHRD, GOI

on

Cognitive Engineering and Human Factors

(2512044), August 04th–08th, 2025

Overview

Cognitive Engineering provides an overview of human cognitive capabilities and techniques for using what we know about cognition to guide the design of complex products, work places, and large systems. How do you best design a working environment for a stressed team to maximize their performance?

Do you want to design cars that won't crash while drivers text? Do you have ideas for optimizing a hospital emergency facility, but wish you knew how? Do you want to create a user interface that is easy to use because it's grounded in measures of cognitive load? Then cognitive engineering is for you. Example work environments include cockpits, car dashboards, and nuclear power plant controls, emergency rooms, and living environments for the elderly, first responder situations, and critical software systems.

Modules	**Day 1 Monday 04th August 2025**	**Lecture 1:** 10:00AM to 11:00AM: **SBG**: Cognition, Attention, and Mental Workload: **Lecture 2:** 11:15AM to 12:15PM: **SBG**: Collect the data and analyse performance **Tutorial 1**: 2:00PM to 4:00PM: **SBG**: How much work can humans handle?
	Day 2 Tuesday 05th August 2025	**Lecture 3:** 10:00AM to 11:00AM: **SBG**: Digital Accessibility & Individual Differences **Lecture 4:** 11:15AM to 12:15PM: **SBG**: User-Centered Universal Design **Tutorial 2**: 2:00 PM to 4:00PM: **SBG**: Designing for Human Differences
	Day 3 Wednesday 06th August 2025	**Lecture 5:** 10:00AM to 11:00AM: **SBG**: Computer-Supportive Collaborative Work (CSCW) **Lecture 6:** 11:15AM to 12:15PM: **SBG**: Teamwork, include Human-AI Teaming **Tutorial 3**: 2:00PM to 4:00PM: **SBG**: Technology as Tool and Teammate
	Day 4 Thursday 07th August 2025	**Lecture 7:** 10:00AM to 11:00AM: **SBG**: Checklist of Cognitive Engineering Part 1 **Lecture 8:** 11:15AM to 12:15PM: **SBG**: Checklist of Cognitive Engineering Part 2 **Tutorial 4**: 2:00PM to 3:00PM: **SBG**: Cognitive Engineering Checklist: Anticipating Risks **Lecture 9:** 3:00PM to 4:00PM: **ML**: Introduction to Human Factors
	Day 5 Friday 08th August 2025	**Lecture 10:** 10:00AM to 11:00AM: **SBG**: Practical Applications Part 1 **Lecture 11:** 11:15AM to 12:15PM: **SBG**: Practical Applications Part 2 **Tutorial 5**: 2:00PM to 3:00PM: **SBG**: Put it all together: Will these products succeed? Justify with cognitive engineering **Lecture 12:** 3:00PM to 4:00PM: **ML**: Anthropometric Design Principles **Examination: ML:** 4:15PM to 5:15PM
You Should Attend If...	➢ You are a student at any levels (B.Des/BTech/BE/M.Des/MSc/MTech/ME/PhD) or Faculty from academic and research institutes. ➢ You are a professional, Executive, Engineer or Researchers from industries like SAIL, HAL, NAL, CSIR Lab, automobile & turbine industries, Design Consultancies, Software Industry etc.	

Fees	The participation fees for taking the course are as follows: **Participants from industry/research laboratory/organization:** ₹4500 + 18%GST= ₹5310/- **Participants from academic institutions:** ₹3000 + 18%GST= ₹3540/- **For students:** ₹1000 + 18%GST= ₹1180/- **Participants from abroad :** US $100+ 18%GST= $118 The above fees include workshop kit and instructional course materials only. The individual course participants will have to borne the charges for their food, transport and accommodation separately. Limited participants will be provided sharing accommodation in the institute guest house and hostel on payment and first cum first serve basis. **Mode of Payment:** The registration/course fee is to be paid through a NEFT/RTGS/UPI in favor of 'Continuing Education, NIT Rourkela' payable at **A/C No.: 10138951784** SBI, NIT Rourkela Branch (Code:2109), IFSC Code: SBIN0002109 **UPI ID: 01389517841@sbi** Merchant Name: Continuing Education NIT **Registration:** Interested participants may proceed for the course registration by filling out the registration form (https://surl.li/clxuck) and paying the non-refundable registration course fee. As the course is completely in offline mode and number of seats is limited, it is advised to do the registration at earliest.

The Faculty

Prof. Stephen B Gilbert (SBG)

Chair, HFES Technical Group on Cognitive Engineering & Decision Making

Prof. Gilbert is Ph.D in Brain and Cognitive Sciences from Massachusetts Institute of Technology USA. He is working as an Associate Director of Iowa State University's VRAC, and Director of its Human Computer Interaction graduate program. He is also associate professor in the Industrial and Manufacturing Systems Engineering department. His research interests focus on technology to advance cognition, human-autonomy teaming, and XR cyber sickness. He works closely with industry, the US National Science Foundation, and the US Department of Defense on research contracts. He has also worked in commercial software development and run his own startup company.

He has been the PI or Co-PI on 63 funded research projects sponsored by the Department of Defense (42% of funds), National Science Foundation (26%), Boeing (7%), John Deere (3%), and others (22%). These projects have generated a total of $24,866,296. These projects have led to 47 journal papers and 159 conference papers with 2763 citations total. The John Deere research led to 2 patents.

Dr. Mohit Lal (ML) is an Assistant Professor in the Department of Industrial Design, National Institute of Technology Rourkela, Odisha, India. He received his Ph.D. degree in Mechanical Engineering with specialization in Machine Design from the Indian Institute of Technology Gwahati, India, in 2013. His current research interests include Physical and Cognitive Ergonomics, Human Factors, Innovative Product Design, UI/UX Design, Biodynamic Modelling, Whole Body and Hand Arm Vibration Analysis, Postural Analysis, Condition monitoring of rotating machines, characteristics parameters estimation of rotor AMB systems etc. He has been the PI on 3 funded research projects sponsored by NSTL-DRDO, TIH-IITG and TEQIP. He has published more than 30 peer reviewed International Journals and Conferences.

Course Coordinator
Dr. Mohit Lal
Assistant Professor
Department of Industrial Design,
National Institute of Technology
Rourkela, Odisha-769008
Phone: 0661-246 2856;
07415189453
E-mail: lalm@nitrkl.ac.in;
dr.mohitlal@gmail.com