LABORATORY PLANNING GUIDE

L20.2 Technical Drawing II Laboratory

Content

G.U.N.T. Gerätebau GmbH, Hanskampring 15-17, 22885 Barsbüttel, Germany
Phone: +49 40 670854-0, E-mail: sales@gunt.de, Web: www.gunt.de

Covered subjects according to the curriculum

Major topics of learning content:

- familiarisation with three-dimensional views
- production-oriented and standardised representation of parts
- surface finish and tolerance specifications
- overview drawing
- parts list
- standard parts
- 3D views
- material specifications
- production-oriented and standardised representation of turned parts:
  dimensioning, surface finish and tolerance specifications
- drawings of cast parts and their special features:
  machining allowances, mould drafts, shrinkage, sectional views
- from the cast part to the finished part:
  production-oriented and standard dimensioning for subsequent machining
- manufacture of cast parts by the sand-casting method
- machine and tool selection, length measurement exercises
- machine elements and their function
- hand-operated tabletop cutaway model for the demonstration of the functionality of
  * a worm gear
  * a mitre gear
  * a spur gear
  * a two-stage spur gear
  * a planetary gear
  * a variable speed belt drive
  * a control gear
  * a multiple-disk clutch
  * an electromagnetic single disk brake
  * a pedestal bearing

Main concept

The laboratory is designed for accommodation of 24 students + 2 laboratory staff:

- 2 - 4 students form a team and work together at a workstation / training system
- 54 experiment sets, in 20 different types
- Easy storage and transportation in a practical case
- Each set is equipped with a manual containing technical information, basic theory, experiment instructions, evaluation help and safety advice.
- Student teams are scheduled to change workstations from lab session to lab session in order to perform the entire range of experiments within the course duration.
- Average time per experiment: 90 to 120 minutes.

2 workstations for laboratory staff (with PC and internet access)

1 printer for common use

1 cupboard for the experiment cases

Initial training provided for laboratory personnel

Trainer: Specialized engineer of G.U.N.T. Gerätebau GmbH, Germany.
To be conducted immediately after installation and commissioning of the equipment.
General topics to be covered for any of the educational systems:

- Basic familiarization with the system.
- Functions and components.
- Overall system configuration aspects.
- Start-up and operational aspects.
- Conduction experiments, including evaluation and calculation.
- Using the system with and without the software (where applicable).
- Trouble shooting and maintenance aspects.
- Hands-on, practical familiarization aspects.
- Seminar participants with the delivered system.
- Details of the manuals.
- Safe operation and preventive maintenance.

Requirements / Utilities

Power supply:

- 230 V / 50 Hz / 1 phase – at least 2 power sockets for staff computers.

Laboratory computer network:

- 2 internet connections for staff

Location:

- Laboratory space min 60 m²
- This laboratory could be installed on any floor (e.g. ground floor or 1st floor)

Schedule of requirements

Item No.	Description	Quantity
Item 1	Bending device	6 pcs.
Item 2	Engineering drawing: casting	6 pcs.
Item 3	Drilling jig for a casting	4 pcs.
Item 4	Drilling jig for an annular disc	4 pcs.
Item 5	Lever shears	4 pcs.
Item 6	Engineering drawing: safety catch	4 pcs.
Item 7	Drilling jig for flat part	4 pcs.
Item 8	Assembly of bending device	4 pcs.
Item 9	Engineering drawing: rotationally symmetrical components	4 pcs.
Item 10	Assembly of lever shears	4 pcs.
Item 11	Cutaway model: worm gear	1 pcs.
Item 12	Cutaway model: mitre gear	1 pcs.
Item 13	Cutaway model: spur gear	1 pcs.
Item 14	Cutaway model: two-stage spur gear	1 pcs.
Item 15	Cutaway model: planetary gear	1 pcs.
Item 16	Cutaway model: variable speed belt drive	1 pcs.
Item 17	Cutaway model: control gear	1 pcs.
Item 18	Cutaway model: multiple-disc clutch	1 pcs.
Item 19	Cutaway model electromagnetic single disk brake	1 pcs.
Item 20	Cutaway model: pedestal bearing	1 pcs.

Laboratory drawing