

International 2-week course of CNC technology and metrology at SPŠ Tábor

The course involves theoretical and practical training located in school classrooms and workshops. Teaching is always provided by two lecturers – a teacher of vocational subjects and an English teacher.

Teaching as well as all the software used is English based.

Scheme of teaching:

8:00 - 9:30 1st block

9:30 - 10:00 break

10:00 - 12:00 2nd block

12:00 - 13:00 lunch in the school canteen

13:00 - 14:30 3rd block

Daily 2 blocks of CNC + 1 block of metrology

The course is scheduled for 40 hours of CNC technology and 10 hour of metrology

Contents of the course of CNC technology at SPŠ Tábor

Operation and adjustment of the machine MCV 754 Quick (3 axis milling machine)

Operation of the control system iTNC530

Basic coordinate area of the machine

CNC Machine tool modes

Tool management

Mounting options of the machine

Preparation of products and semi-finished products

Determining tool correction (with a probe, without a probe)

Determining tool correction by presetting and measuring machine

Zero point shifting (with a probe, without a probe)

Production using the machine (first piece production)

Programming of the control system iTNC530

Construction of CNC program

Effect of drawing documentation on programming

Longitudinal and circular interpolation

Programs simulation options

Tool table

Programming and circular interpolation usage

Polar coordinates

Cycles – drilling, pockets

Cycles – SL cycles

Parameter programming

Programming of the control system SINUMERIK 840D (introduction)

Construction of CNC program (sample)

Longitudinal and circular interpolation (sample)

Program simulation options (sample)

Differences between Heidenhain programming methods and a SINUMERIK (FANUC)

Technological programming of CNC machines by computer (introduction)

Differences between workshop and technological programming

Advantages of CAx systems

Production preparation in InventorCAM

Simulation options

Generate and debug CNC program using postprocessor

Program transfer to machine (in fact: using USB connection)

Production of the component according to generated program

Metrology

Quantities and Units

Using general measurement gauges

Correct measurement principles

Measurement errors

Operation and adjustment of the coordinate measuring machine

Measuring machine parts

The program of course

	8:00 – 9:30	10:00 – 12:00	13:00 – 14:30
1st day - Monday	Introduction, Safety informations Room A219 – Trávníčková, Vančura	CNC technology Basic coordinate area of the machine A084 - Vančura	Introduction to mechanical measurements A402 - Nousek
2nd day - Tuesday	Operation and adjustment of the machine MCV 754 Quick A084 - Vančura	Operation of the control system iTNC530 A084 - Vančura	CNC Machine modes Construction of CNC program Effect of drawing documentation on programming A084 - Vančura
3rd day - Wednesday	Using the presetting and measuring machine A081 - Vančura	Programming of the control system iTNC530 A084 - Vančura	Correct measurement principles, measurement errors A402 - Nousek
4th day - Thursday	Operation and adjustment of the machine MCV 754 Quick A084 - Vančura	Programming of the control system iTNC530 A084 - Vančura	Using general measurement gauges A402 - Nousek
5th day - Friday	Programming of the control system iTNC530 A084 - Vančura	Programming of the control system iTNC530 A084 - Vančura	Introduction to working with a coordinate measuring machine A402 - Nousek
Weekdays			
6th day - Monday	Programming of the control system iTNC530 A084 - Vančura	Programming of the control system iTNC530 A084 - Vančura	Measuring machine parts A402 - Nousek
7th day - Tuesday	Differences between Heidenhain programming methods and a SINUMERIK (FANUC) A283 - Vančura	Advantages of CAx systems A283- Vančura	Technological programming of CNC machines by computer A283 - Vančura

8th day - Wednesday	Technological programming of CNC machines by computer A283 - Vančura	Time reserve A084 - Vančura	Knowledge test
9th day - Thursday	Excursion in a company producing CNC machines Vančura		Preparation of presentations A084
10th day - Friday	Preparation of presentations A282	Presentations A154	End of course

The course program is only a suggestion and can be changed based on the actual needs and knowledge of participants.