

Course description

Course abbreviation:	KTO/ANC2	Page:	1 / 4
Course name:	Automation of NC Programming 2		
Academic Year:	2023/2024	Printed:	03.06.2024 09:08

Department/Unit /	KTO / ANC2			Academic Year	2023/2024
Title	Automation of NC Programming 2			Type of completion	Exam
Accredited/Credits	Yes, 5 Cred.			Type of completion	Combined
Number of hours	Lecture 1 [Hours/Week] Tutorial 3 [Hours/Week]			Course credit prior to	YES
Occ/max	Status A	Status B	Status C	Counted into average	YES
Summer semester	4 / -	0 / -	0 / -	Min. (B+C) students	10
Winter semester	0 / -	0 / -	0 / -	Repeated registration	NO
Timetable	Yes			Semester taught	Summer semester
Language of instruction	Czech			Internship duration	0
Optional course	Yes			Ev. sc. – cred.	S/N
Evaluation scale	1 2 3 4				
No. of hours of on-premise					
Auto acc. of credit	Yes in the case of a previous evaluation 4 nebo nic.				
Periodicity	K				
Substituted course	None				
Preclusive courses	N/A				
Prerequisite courses	N/A				
Informally recommended courses	KTO/ZNC				
Courses depending on this Course	and KTO/ANC1 N/A				

Course objectives:

To teach students to work with higher programming CAD / CAM systems, understand their philosophy and be able to use technology to create complex shaped surfaces.

Requirements on student

Credit:

Submitting and defending Semester work.

Test:

Development of the NC program in a given programming language and oral answer three questions

Content

- CAD/CAM systems - general introduction, characteristics, functions
- Modeling in CAD / CAM system of surface features, technology related
- Modeling in CAD / CAM system features volume, technological context
- NC Module - a general introduction, technological modules
- NC module - turning technology features
- NC module - milling technology features
- NC modules - five-axis machining and the specifics of the process, technological features
- NC module - CL data postprocessing, post-processor, the NC program

Fields of study

Vytvořena skupina v MS Teams, která slouží pro online výuku. Skupina obsahuje i podklady v elektronické formě.

Guarantors and lecturers

- **Guarantors:** Ing. Jan Hnátík, Ph.D. (100%)
- **Lecturer:** Ing. Luboš Kroft, Ph.D.
- **Tutorial lecturer:** Ing. Jan Hnátík, Ph.D. (50%), Ing. Luboš Kroft, Ph.D. (50%)

Literature

- **Basic:** Janděčka, Karel; Kožmin, Pavel; Česánek, Jiří. *Programování NC strojů*. V Plzni : Západočeská univerzita, 2000. ISBN 80-7082-692-4.
- **Recommended:** Hnátík, Jan. *NC technologie - praktická část*. [Plzeň] : SmartMotion, 2013. ISBN 978-80-87539-29-3.
- **Recommended:** Hnátík, Jan. *NC technologie - teoretická část*. [Plzeň] : SmartMotion, 2013. ISBN 978-80-87539-28-6.
- **Recommended:** Janděčka, Karel. *Využití moderních CAD/CAM systémů při programování NC strojů*. Plzeň : Západočeská univerzita, 1996. ISBN 80-7082-260-0.

Time requirements

All forms of study

Activities	Time requirements for activity [h]
Practical training (number of hours)	39
Preparation for an examination (30-60)	50
Undergraduate study programme term essay (20-40)	30
Contact hours	39
Total:	158

assessment methods

Knowledge - knowledge achieved by taking this course are verified by the following means:

- Seminar work
- Individual presentation at a seminar
- Combined exam

Skills - skills achieved by taking this course are verified by the following means:

- Seminar work
- Individual presentation at a seminar
- Practical exam

Competences - competence achieved by taking this course are verified by the following means:

- Seminar work
- Oral exam

prerequisite

Knowledge - students are expected to possess the following knowledge before the course commences to finish it successfully:

- interpretovat základní příkazy NC kódu.
- vypočítat řezné podmínky na základě geometrie řezného nástroje a typu operace.
- popsat základní logiku fungování NC strojů

Skills - students are expected to possess the following skills before the course commences to finish it successfully:

zpracovat vyhledané odborné informace.
 navrhnout vhodnou technologii výroby součástí.
 na základě volby nástroje a materiálu obrobku navrhnout řezné podmínky.
 modelovat součást a sestavy v CAD systémech.

Competences - students are expected to possess the following competences before the course commences to finish it successfully:

N/A

teaching methods**Knowledge - the following training methods are used to achieve the required knowledge:**

Practicum
 One-to-One tutorial
 Skills demonstration
 Lecture
 Task-based study method
 Project-based instruction
 Multimedia supported teaching

Skills - the following training methods are used to achieve the required skills:

Practicum
 Skills demonstration
 One-to-One tutorial
 Lecture
 Multimedia supported teaching
 Task-based study method
 Project-based instruction

Competences - the following training methods are used to achieve the required competences:

Practicum
 Lecture
 Task-based study method
 Project-based instruction
 Multimedia supported teaching

learning outcomes**Knowledge - knowledge resulting from the course:**

vysvětlit základní strategie pro obrábění tvarově složitých ploch.
 popsat vhodnou strategii řízení osy řezného nástroje při plynulém víceosém obrábění
 popsat výhody a nevýhody jednotlivých režimů simulace.

Skills - skills resulting from the course:

provádět pokročilé simulace obrábění v CAM systémech.
 navrhnout víceosou technologii pro obrábění tvarově složitých ploch
 Analyzovat přesnost vyrobené tvarové plochy.

Competences - competences resulting from the course:

N/A

Course is included in study programmes:

Study Programme	Type of	Form of	Branch	Stage	St. plan v.	Year	Block	Status	R.year	R.
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Study Programme	Type of	Form of	Branch	Stage	St. plan v.	Year	Block	Status	R.year	R.
Engineering	Bachelor	Full-time	Programming of NC Machines	1	2020	2023	Compulsory courses	A	3	LS