



Final exam questions

Subject group name: **Process Planning**

Neptun code: ZVEGEGTNWPP

Credit points: 3

Subject in this subject group:

- **Process Planning** (BMEGEGTNWPP)

Program: Mechanical Engineering Modelling, MSc (2N-MW0)

Specialization: Design and Technology

Responsible person:

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You can check the current subject forms at the Educational Portal of the Faculty of Mechanical Engineering.

<https://oktatas.gpk.bme.hu/>

Always check the for updates at edu.gpk.bme.hu before preparing for the exam, especially if the subject group contains at least one subject from your final semester!

Valid from 01 September 2021

Dr. Norbert Geier

Assistant professor

Process Planning (BMEGEGTNWPP)

1. The „heroic” age of computer aided engineering – Computerisation after the development of numerical control – Consequence and attendance of NC and CNC developments – direct and indirect tasks of manufacturing planning (programming) – the levels of automation (sequencing, operation planning, parametering, adaptation and conceptional, embodiment and detailed planning).
2. „Processor-Postprocessor Theory” – Basic modules of process planning – object and process oriented concepts of engineering (manufacturing process planning) – The historic steps of computer modularisation and integration (CAxx systems) – Independent and bound systems
3. The structure and levels of Computer Integrated Systems (enterprise, production level and shop-floor programming) – Object and process oriented integration of computer systems – Main modules of an integrated systems on the different levels of manufacturing process planning.
4. Generative (heuristic) methods and variative synthesis of manufacturing process planning – Type and Group Technology – Axiomatic and synthetic adaptation within process planning.
5. Preliminary Planning – Design for manufacture, product and preproduct analysis for unique, series or mass production – Creation of manufacturing allowance plans taking account of error components of the manufacturing environment (PDMTC system) – Cost based selection of preproduct types and calculation of critical series numbers
6. Sequencing tasks in the different levels of manufacturing process planning – Preliminary conditions and condition systems (separated and combined process elements) – Determination of sequence variants (matrix reduction and vector variant methods)
7. Process planning and scheduling (PPC/S, CAST, MRP modules) – Determination a GANTT diagrams (priority rules) and deterministic PERT diagram (network plans, progressive and retrograde calculations) – Methods of meeting deadlines
8. Process planning and scheduling (PPC/S, CAST, MRP modules) – Stochastic Network Plans – PERT diagram (handling of time elongations, uncertainty) – Methods of calculation probability for meeting deadlines
9. Operation Planning – Handling of quality parameters of objects and process elements (main differences and connections of constructional and shop-draw parameters) – Deterministic and stochastic view of quality parameters – Calculation of probability – Process planning for full and partial changeability of items.
10. Statistical Process Control – The basic rules of SPC– Principal SPC parameters – Process capacity and productivity (power) and index – Connections between partial changeability and statistical process planning
11. Statistical Process Control – The basic rules of SPC– Principal SPC parameters – Process capacity and productivity (power) and index – Connections between partial changeability and statistical process planning
12. Operation element planning (parametering) – Optimisation of process parameters (based on singular cutting processes (e.g. longitudinal turning) – Optimisation models – interpretation fields, basic functions and optimisation algorithms especially in singular cutting processes