

Theme issues to FSE of Forest Engineering

Forest Management

1. Data gathering and mensuration
2. Methods of determination of standing volume
3. Growth and increment
4. Empirical growth models
5. Mechanistic (process) growth models and morphological (Functional-Structural growth models)
6. Clearcut and shelterwood management systems
7. Selection forest and selective cut management system
8. Temporal arrangement of the forest
9. Spatial arrangement of the forest
10. Cutting control and allowable cut, forest maturity
11. Forest Management Plan and Forest Management Guidelines in Czech Republic
12. Optimization in forest management: general frameworks and background theory
13. Application of optimization in forest management: practical cases and examples

Forestry Economy

14. Basic principles of environmental and forestry policy.
15. Instruments of the forestry policy. General forest taxation concepts.
16. Specifics of the forestry economy.
17. Forest enterprise goals. The importance of forests ownership.
18. Negative and positive externalities in forestry.
19. Present value and net present value. Faustman formula.
20. The forest and capital. Criteria for accepting or rejecting investment.
21. Investment analysis and inflation.
22. Optimal timber stocking.
23. Risk free and risky revenues. The importance of risk analysis in forestry.
24. Forest valuation and appraisal .
25. Valuation of non-market forest outputs.
26. Timber demand and supply.
27. Multiple use forestry.
28. Forestry and regional economic analysis.

Forest Harvesting

1. Timber Defects and Grading
2. Technological Preparation for Forest Harvesting
3. Timber Measurements and Log Scaling
4. Logging Methods
5. Chain Saw and Motor Manual Felling
6. Harvester Technology
7. Processing of Logging Residues
8. Primary Timber Transport – Skidding, Yarding, Forwarding
9. Timber Haulage
10. Occupational of Safety and Health in Forest Harvesting
11. Influence of Forestry Mechanization on Stands

Silviculture

1. Sources, types and uses of reproductive material
2. Types, stratification of seeds and its qualitative parameters
3. Operations in forest nurseries producing a bare-rooted planting stock (e.g. root pruning, transplanting, weeding and lifting)
4. Container stock (technology, containers, shifting and handling). Comparison of bare-rooted and container stock (pros and cons).
5. Storage and transportation of nursery stock (heeling in, sheds, refrigerated stores, reason and principle)
6. Silvicultural systems in present forestry practice (uniform management systems and selection management system)
7. Methods of forest stand regeneration (natural and artificial regeneration, biological requirements, seedbed conditions, germination, survival, establishment, techniques)
8. Management of young forest stands (protection and weed control, fertilization, cleaning techniques and objectives)
9. Thinning methods of forest stands of the main commercial tree species (Norway spruce, Scots pine, European beech, Oak spp.)
10. State of the forests in the Czech Republic

Forest Protection

1. Management of forest weeds – management types and consequences.
2. The most important weeds in forestry – their most appropriate management.
3. Causes and consequences of incidence of wood-inhabiting fungi in commercial forests.
4. Amendments regarding problems with fungi in forest nurseries.
5. Interconnection of abiotic and biotic factors in forests – consequences and management.
6. Importance of defoliating insects in broadleaves vs. conifers.
7. The most important damages caused by large vertebrates in forests.
8. Potential of beneficial insects in forest protection. Examples.
9. The most important factors causing fire in forests and problems in flat vs. topographically diversified forests.
10. The influence of wild game and domestic animals on natural forestation and afforestation.