



ECAR ENGINEERING CENTRE

Modular training program «Engineering Center Management School»

Catalogue of module «PLANNING AND CONTROL»

Training list:

- Engineering center work planning and control methods and tools (PMDB, SQCDP) (1 day training)
- Engineering work measurement methods and tools (1 day training)
- Methods and tools of engineering projects financial performance tracking (1 day training)
- Engineering projects risk management: ECAR practical experience (1 day training)
- Internship with ECAR project manager (1 day internship)

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JSC ENGINEERING CENTER ECAR

Seminar program:

“Engineering center work planning and control methods and tools (PMDB, SQCDP)”

Moscow



JSC ENGINEERING CENTER ECAR

"Engineering center work planning and control methods and tools (PMDB, SQCDP)"

1. SEMINAR PURPOSE:

To acquaint attendees with the methods and tools for planning engineering works using practical examples of JSC ECAR.

2. TARGET AUDIENCE:

The seminar is meant for managers and specialists of design bureaus, design and engineering departments of various mechanical engineering companies.

3. SEMINAR CHARACTERISTICS:

- ✓ The duration of the seminar – 8 acad. hours (1 day);
- ✓ Seminar timing – from 10.00 to 17.15;
- ✓ Breaks: two coffee breaks and lunch.

4. SEMINAR DESCRIPTION:

- ✓ During the seminar, attendees will get acquainted with the unique practical experience and theoretical foundation on the use of methods and tools for work planning and monitoring from the engineering center specialists of the leading European aircraft corporation;
- ✓ The program, built on the principle "from theory to practice", will allow to master the material in a short time and then successfully use it in practice.

5. CRITERIA FOR SUCCESSFUL SEMINAR COMPLETION:

- ✓ Basic knowledge in project management;
- ✓ Compliance with the timing, rules of participation in the seminar;
- ✓ Initiative behavior of attendees;
- ✓ An open form of discussion of issues under consideration.

6. SEMINAR OUTPUT:

An attendee receives theoretical knowledge about methods and tools for work planning and monitoring of the engineering center and acquires skills to work with them.

7. SEMINAR CONDITIONS:

- ✓ The possibility of conducting classes using teaching aids (computer or laptop, projector, screen, blackboard, etc.);
- ✓ The ability to work under normal lighting conditions and in ventilated classrooms;
- ✓ The ability to freely use sanitary facilities and break areas;
- ✓ The seminar can be held both face-to-face and online.

Handout materials issued to attendees:

- ✓ *Seminar training program;*
- ✓ *Seminar handout material (for educational purposes).*



8. SEMINAR SCHEDULE:

Topic No.	Topic name	Time, hour
1	Registration of attendees. Presentation of the lecturer. Information about JSC ECAR. The rules of the seminar.	09.30–10.00
2	Engineering work planning system: - General scheme of the planning process; - Input (work breakdown structure, people, amount of work); - Output (delivery dates, people plan). Types of project schedules. Applicability criteria: - Master schedule; - Detailed schedule. Software for scheduling.	10.00–11.30
Break (coffee break)		11.30–11.45
3	Practical exercise on planning. The system for monitoring and check of engineering work timing: - The general plan of the monitoring process. Basic tools: - S-curves (initial / predicted / restoring).	11.45–13.15
Break (lunch)		13.15–14.00
4	The system for monitoring and check of engineering work timing: Basic tools: - Key process indicators; - Visual monitoring; - Earned Value Technique; Working with deviations. Corrective actions.	14.00–15.20
Break (coffee break)		15.20–15.30
5	A practical exercise on monitoring. Questions and answers.	15.30–16.45
6	Summing-up and certificate issuing.	16.45–17.15



JSC ENGINEERING CENTER ECAR

Seminar program:

"Engineering work measurement methods and tools"

MOSCOW



1. SEMINAR PURPOSE:

- ✓ To consider the system of methods and tools for labour norming in engineering and design departments;
- ✓ To give an impression of principles of norming engineering and design work and work on strength calculations, the main methods and approaches, to study tools used to determine the labour intensity;

2. TARGET AUDIENCE:

The seminar is meant for managers and specialists of departments for the production system development involved in projects of operational efficiency improvement; for managers and specialists of design bureaus, design and engineering departments of various mechanical engineering companies.

3. SEMINAR CHARACTERISTICS:

- ✓ The duration of the seminar – 8 acad. hours (1 day);
- ✓ Seminar timing – from 10.00 to 17.15;
- ✓ Breaks: two coffee breaks and lunch.

4. SEMINAR DESCRIPTION:

- ✓ The seminar will discuss norming principles of engineering and design work and strength calculations, as well as their main methods, approaches, and tools;
- ✓ The practical part of the seminar will allow participants to train in constructing a "Labour intensity calculator" and methods of working with it.

5. CRITERIA FOR SUCCESSFUL SEMINAR COMPLETION:

- ✓ Basic knowledge in labour norming methods and tools;
- ✓ Compliance with the timing, rules of participation in the seminar;
- ✓ Initiative behaviour of attendees;
- ✓ An open form of discussion of issues under consideration.

6. SEMINAR OUTPUT:

The attendee receives theoretical knowledge about labour norming methods and tools in engineering and design departments and practical skills to work with them.

7. SEMINAR CONDITIONS:

- ✓ The possibility of conducting classes using teaching aids (computer or laptop, projector, screen, blackboard, etc.);
- ✓ The ability to work under normal lighting conditions and in ventilated classrooms;
- ✓ The ability to freely use sanitary facilities and break areas;
- ✓ The seminar can be held both face-to-face and online.

Handout materials issued to attendees:

- ✓ Seminar training program;
- ✓ Seminar handout material (for educational purposes).



8. SEMINAR SCHEDULE:

Topic No.	Topic name	Time, hour
1	Registration of attendees. Presentation of the lecturer. Information about JSC ECAR. The rules of the seminar.	09.30–10.00
2	Determination of labour intensity, labour norming: <ul style="list-style-type: none"> - The concept of labour norming; - Review of evaluation methods of labour intensity (deterministic and probabilistic methods). 	10.00–11.30
Break (coffee break)		11.30–11.45
3	Application of labour norming tools in engineering and design work: <ul style="list-style-type: none"> - Applicability (3D models, drawings, calculations, sketches, etc.); - Methods and tools of norming used in JSC ECAR; - The expert evaluation method and the probabilistic method for determining labour intensity at the stage of design definition. Practice: expert evaluation of work and determination of its spread.	11.45–13.15
Break (lunch)		13.15–14.00
4	Application of labour norming tools in engineering and design work: <ul style="list-style-type: none"> - The system of norming based on categories (catalogues), the role of statistics; - "Labour intensity calculator" as a norming tool, difference from a catalogue system; - Methods for determining labour intensity of work using the "Labour intensity Calculator" 	14.00–15.20
Break (coffee break)		15.20–15.30



Topic No.	Topic name	Time, hour
5	Application of labour norming tools in design and engineering work. Principles of constructing the "Labour intensity calculator" Employee performance evaluation. Principles of norming of strength calculation tasks. Methods and examples of reducing task difficulty, evaluation of the economic effect. Administrative task norming. Practice: The use of beta distribution in the work evaluation: - Building a labour intensity calculator; - Evaluation of work using the labour intensity calculator; - Performance evaluation (productivity).	15.30–16.45
6	Questions and answers. Summing-up and certificate issuing.	16.45-17.15



JSC ENGINEERING CENTER ECAR

Seminar program:

"Methods and tools of engineering projects financial performance tracking"

MOSCOW



1. SEMINAR PURPOSE:

- ✓ Consider the main financial performance indicators of design and engineering work, their tracking, identification of deviations;
- ✓ Give an impression of methods and ways of analyzing reasons for the financial performance decline;
- ✓ Consider ways to improve financial indicators, reduce the costs.

2. TARGET AUDIENCE:

The seminar is meant for managers and specialists of departments for the production system development involved in operational efficiency improvement projects; for managers and specialists of design bureaus, design and engineering departments of various mechanical engineering companies, as well as for managers and specialists of HR management departments of companies of various industries.

3. SEMINAR CHARACTERISTICS:

- ✓ The duration of the seminar – 8 acad. hours (1 day);
- ✓ Seminar timing – from 10.00 to 17.15;
- ✓ Breaks: two coffee breaks and lunch.

4. SEMINAR DESCRIPTION:

- ✓ During the seminar, the main project financial indicators will be described, the project profitability management processes, used in JSC ECAR, will be considered;
- ✓ The practical part of the seminar will allow attendees to practice calculating the financial performance of a project using the earned value technique.

5. CRITERIA FOR SUCCESSFUL SEMINAR COMPLETION:

- ✓ Practical knowledge in the management of design and engineering activities;
- ✓ Compliance with the timing, rules of participation in the seminar;
- ✓ Initiative behavior of attendees;
- ✓ An open discussion of issues under consideration.

6. SEMINAR OUTPUT:

The attendee receives theoretical knowledge about methods and ways of managing the cost of work in engineering projects and skills to work with them.

7. SEMINAR CONDITIONS:

- ✓ The possibility of conducting classes using teaching aids (computer or laptop, projector, screen, blackboard, etc.);
- ✓ The ability to work under normal lighting conditions and in ventilated classrooms;
- ✓ The ability to freely use sanitary facilities and break areas;
- ✓ The seminar can be held both face-to-face and online.

Handout materials issued to attendees:

- ✓ Seminar training program;
- ✓ Seminar handout material (for educational purposes).

**8. SEMINAR SCHEDULE:**

Topic No.	Topic name	Time, hour
1	Registration of attendees. Presentation of the lecturer. Information about JSC ECAR. The rules of the seminar.	09.30–10.00
2	Presentation of JSC ECAR projects. Description of the main financial indicators of the project.	10.00–11.30
Break (coffee break)		11.30–11.45
3	The process of tracking the financial performance of a project: - Creating a budget hierarchy based on contract data; - Evaluation of works performed using the earned value technique; - Calculation of the project's financial performance.	11.45–13.15
Break (lunch)		13.15–14.00
4	Calculation of the financial performance: - Based on categories of engineers working on a project; - Based on salaries of engineers working on a project; Analysis of reasons for the financial performance decline: - External reasons; - Internal reasons. Practice: the analysis of the project's financial performance.	14.00–15.20
Break (coffee break)		15.20–15.30



Topic No.	Topic name	Time, hour
5	Ways to improve financial indicators: <ul style="list-style-type: none">- Regular tracking;- Task detailing;- Implementation of the labour intensity calculator;- Setting goals for employees;- Optimization of the project team;- Working with a customer.	15.30–16.45
6	Questions and answers. Summing-up and certificate issuing.	16.45-17.15



JSC ENGINEERING CENTER ECAR

Seminar program:

"Engineering projects risk management: ECAR practical experience"

MOSCOW



1. SEMINAR PURPOSE:

- ✓ To review risk management methodology at different stages of a project;
- ✓ To master skills of using basic risk management tools.

2. TARGET AUDIENCE:

The seminar is meant for managers and specialists of departments for the development of the production system involved in operational efficiency improvement projects; for managers and specialists of design bureaus, design and engineering departments of various mechanical engineering companies related to the construction development and modification, production support, quality assurance of engineering documentation, as well as for managers and specialists of quality departments of companies of various industries.

3. SEMINAR CHARACTERISTICS:

- ✓ The course duration – 8 acad. hours (1 day);
- ✓ Seminar timing – from 10.00 to 17.15;
- ✓ Breaks: two coffee breaks and lunch.

4. SEMINAR DESCRIPTION:

- ✓ The seminar will discuss principles, methods, and tools of risk management in engineering projects;
- ✓ The program, built on the rule "from theory to practice", will allow to master the material in a short time and then successfully use it in practice.

5. CRITERIA FOR SUCCESSFUL SEMINAR COMPLETION:

- ✓ Basic knowledge in project management;
- ✓ Compliance with the timing, rules of participation in the seminar;
- ✓ Initiative behavior of attendees;
- ✓ An open form of discussion of issues under consideration.

6. SEMINAR OUTPUT:

The attendee receives theoretical knowledge and practical skills about methods and ways of risk management in engineering projects.

7. SEMINAR CONDITIONS:

- ✓ The possibility of conducting classes using teaching aids (computer or laptop, projector, screen, blackboard, etc.);
- ✓ The ability to work under normal lighting conditions and in ventilated classrooms;
- ✓ The ability to freely use sanitary facilities and break areas;
- ✓ The seminar can be held both face-to-face and online.

Handout materials issued to attendees:

- ✓ Seminar training program;
- ✓ Seminar handout material (for educational purposes).



8 SEMINAR SCHEDULE:

Topic No.	Topic name	Time, hour
1	Registration of attendees. Presentation of the lecturer. Information about JSC ECAR. The rules of the seminar.	09.30–10.00
2	Theoretical foundations.	10.00–11.00
Break (coffee break)		11.00–11.15
3	Tools for consideration external and internal factors. Risks and their identification: <ul style="list-style-type: none"> - Problems that block the work: Open Item list; - On-time delivery: visualization, S-curve tool; - Delivery quality: checklist database, input and output data; - Budget: process map, check of uncoordinated work, evaluation of work; - Suppliers-customer information flows (Project review meeting, Technical review meeting). 	11.15–12.45
Break (lunch)		12.45–13.45
4	Feedback system within the project: <ul style="list-style-type: none"> - The use of personal Key Performance Indicators for engineers; - Internal meetings: technical meetings; meetings on solving problems related to the delivery quality; meetings on work planning (Technical review meeting, Quality review meeting, Visual Planning). Risks at various stages of the project. Tools for project risk monitoring, frequency of their use. Risk Assessment. Corrective actions to reduce risks.	13.45–15.15
Break (coffee break)		15.15–15.30
5	Practice.	15.30–16.45
6	Questions and answers. Summing-up and certificate issuing.	16.45–17.15



JSC ENGINEERING CENTER ECAR

Program:

"Internship with ECAR project manager"

MOSCOW



JSC ENGINEERING CENTER ECAR

" Internship with ECAR project manager "

1. TRAINING PURPOSE:

- ✓ To get the unique experience of participating in project management processes, to see the "kitchen" of the project team and the company from the inside;
- ✓ To learn all the intricacies of project management first-hand;
- ✓ To get the opportunity of consultation to solve specific problems in an attendee's company.

2. TARGET AUDIENCE:

The training is meant for managers and specialists of departments for the development of the production system involved in operational efficiency improvement projects; for project managers (leading on the topic) of design bureaus, design and engineering departments of various mechanical engineering companies.

3. TRAINING CHARACTERISTICS:

- ✓ The training format – "become a member of the team and learn how the system works" (no more than 2 participants in a group);
- ✓ The duration of the training – 8 acad. hours (1 day);
- ✓ Seminar timing – from 10.00 to 17.15;
- ✓ Breaks: two breaks (coffee breaks), lunch.

4. TRAINING DESCRIPTION:

During the practical training, participants have the unique opportunity to gain maximum practical knowledge and skills in the shortest time. All stages of the project management process will be considered on real examples, participants will have the opportunity to look at the processes from the inside and ask all the questions they have.

5. CRITERIA FOR SUCCESSFUL TRAINING COMPLETION:

- ✓ Before taking the training, it is advisable to take training on the following topics: "Engineering center work planning and control methods and tools (PMDb, SQCDP)", "Engineering work measurement methods and tools", "Methods and tools of engineering projects financial performance tracking", "Engineering projects risk management: ECAR practical experience";
- ✓ Attendee involvement in the training process;
- ✓ Initiative, attentiveness of the attendee;
- ✓ An open form of discussion of issues under consideration.

6. TRAINING OUTPUT:

In a short time, an attendee receives a maximum practical knowledge and skills in the field of project management applied in the engineering center.

7. TRAINING CONDITIONS:

- ✓ The possibility of conducting classes using teaching aids (computer or laptop, projector, screen, blackboard, etc.);
- ✓ The ability to work under normal lighting conditions and in ventilated classrooms;
- ✓ The ability to freely use sanitary facilities and break areas;
- ✓ The practical training can only be conducted in a face-to-face format.



Handout materials issued to attendees:

- ✓ Training program;
- ✓ Training handout material (for educational purposes).

8. TRAINING SCHEDULE:

Topic No.	Topic name	Time, hour
1	Presentation of the trainer. Discussion of organizational issues.	09.30–10.00
2	Presentation of JSC ECAR projects. The job description of the project manager: <ul style="list-style-type: none">- Functional responsibilities;- Required knowledge and experience;- Rights.	10.00–11.30
Break (coffee break)		11.30–11.45
3	Project goals: <ul style="list-style-type: none">- Goals of the project manager from the company's management;- Relationship between the company's goals and projects;- Principles of cascading goals from the manager to the subordinates (team leaders and engineers). Interaction with the customer: <ul style="list-style-type: none">- Principles of customer relationship management;- Labour intensity evaluation;- Weekly reporting;- Quarterly reporting.	11.45–13.15
Break (lunch)		13.15–14.00

**JSC ENGINEERING CENTER ECAR**

" Internship with ECAR project manager "

Topic No.	Topic name	Time, hour
4	Working with a team: <ul style="list-style-type: none">- Visual planning;- Visualization board;- Project Management Database (PMDB);- Employee motivation and its tools.	14.00–15.20
Break (coffee break)		15.20–15.30
5	Interaction with the management and related departments of the company: <ul style="list-style-type: none">- Team size planning and required competencies;- Separation of functional (heads of departments) and operational responsibilities (project managers);- Control and management of the project budget;- Quality;- IT.	15.30–16.45
6	Questions and answers. Summing-up and certificate issuing.	16.45–17.15