

FANUC LEVEL 4

ADVANCED TEACH PENDANT PROGRAMMING

INTENDED AUDIENCE

Students who have attended FANUC Level 1 and Level 2, or who perform programming regularly.

COURSE DESCRIPTION

This continuation course covers FANUC advanced programming methods, advanced utilities, and reviews any knowledge gaps on core topics. This course will enable students to program and troubleshoot complex teach pendant programs.

Students will review core robot skills, create, and test cycle advanced program instructions. Students will make use of different input and output types, as well as communication methods critical for operation and troubleshooting. Advanced instructions that can be implemented to automate robot recovery, help eliminate operator error, and turn processes on and off when the robot is idle — such as turning off air or purging gas, or verifying the status of external equipment — are also covered.

Advanced instructions and register math are covered as these are used in vision, palletizing, racking, and other advanced applications that require position offsets.

2026 LEVEL 4 CLASS SCHEDULE

Start Date	End Date	Location	Seats Open	Duration	Language
4-27	5-01	Michigan, USA	5	5 Days	English
7-27	7-31	Michigan, USA	8	5 Days	English
10-26	10-30	Michigan, USA	6	5 Days	English

Course applies to: R-J3, R-J3i, R-J3iB, R-30iA, R-30iB, R-30iB Plus robot controllers.



TOPICS COVERED

- **Register Math:** Used in vision, stacking/destacking, and palletizing applications to offset positional data.
- **Mixed Logic:** Instructions that allow for faster programming by enabling complex math and logic functions in a single instruction.
- **BG Logic:** Background logic that can be implemented to perform functions outside of the core program thread the robot is running, allowing for the checking of conditions and immediate decision-making to prevent operator errors.
- **Arguments:** Reduce the number of instructions and programs used by initiating dynamic changes to functions based on signals and system feedback.
- **Skip Conditions:** Used in search functions to make logical decisions based on machine status, such as whether to search when parts are present or when to stop searching when the stack is empty.
- **Error Recovery:** Covers methods used for automated recovery from minor cycle interruptions, robot crashes, or errors. When implemented, these methods reduce downtime by eliminating or minimizing human interaction.
- **Multiple Control:** Used in error recovery, system monitoring, and downtime logging through TP programs, allowing for the implementation of advanced features without the need for programming experts.
- **FANUC Advanced Utilities:** Program adjust, program shift, UTool and UFrame offsets.
- **Motors:** Tuning, mastering, and calibration of motors so no position touch-up is required after a motor swap.
- **TCP:** TCP setup and tuning to avoid program touch-up in the event of tooling damage for specific applications.
- **Backups:** Creation and restoration of standard and image backups without having to re-master the robot or touch up program positions.

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