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Section A: Planning Detailed Schedules

Term
Back scheduling

Module 5
Section A: Planning Detailed Schedules

Term
Batch processing

Module 5
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Term
Block scheduling

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Term
Capacity cushion

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Term
Capacity requirements

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Term
Capacity utilization

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Term
Central point scheduling

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Term
Continuous process control

1) A manufacturing technique in which parts are accumulated and processed together in a lot. 2) A computer technique in which transactions are accumulated and processed together or in a lot. Syn.: batch production.

A technique for calculating operation start dates and due dates. The schedule is computed starting with the due date for the order and working backward to determine the required start date and/or due dates for each operation. Syn.: backward scheduling. Ant: forward scheduling.

Extra capacity that is added to a system after capacity for expected demand is calculated. Syn.: safety capacity. See: protective capacity.

An operation scheduling technique where each operation is allowed a “block” of time, such as a day or a week.

Goods produced, or customers served, divided by total output capacity.

The resources needed to produce the projected level of work required from a facility over a time horizon. [These] are usually expressed in terms of hours of work or, when units consume similar resources at the same rate, units of production.

The use of transducers (sensors) to monitor a process and make automatic changes in operations through the design of appropriate feedback control loops. Although such devices have historically been mechanical or electromechanical, there is now widespread use of microcomputers and centralized control.

A variant of scheduling that employs both forward and backward scheduling, starting from the scheduled start date of a particular operation.

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Control board

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Term
Critical ratio

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Dispatch list

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Term
Dispatching

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Term
Dispatching rule

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Term
External setup time

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Term
Finite forward scheduling

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Term
Flow rate

A dispatching rule that calculates a priority index number by dividing the time to due date remaining by the expected elapsed time to finish the job. [This is calculated by dividing time remaining by work remaining. For example, a ratio less than 1.0 indicates the job is behind schedule, a ratio greater than 1.0 indicates the job is ahead of schedule, and a ratio of 1.0 indicates the job is on schedule.]

A visual means of showing machine loading or project planning, usually a variation of the basic Gantt chart. Syn.: dispatch(ing) board, planning board, schedule board. See: schedule chart.

The selecting and sequencing of available jobs to be run at individual workstations and the assignment of those jobs to workers.

A listing of manufacturing orders in priority sequence. The dispatch list, which is usually communicated to the manufacturing floor via paper or electronic media, contains detailed information on priority, location, quantity, and the capacity requirements of the manufacturing order by operation. Dispatch lists are normally generated daily and oriented by work center. Syn.: work center schedule, priority report.

The time associated with elements of a setup procedure performed while the process or machine is running. Ant: internal setup time.

The logic used to assign priorities to jobs at a work center.

Running rate; the inverse of cycle time; for example, 360 units per shift (or 0.75 units per minute).

An equipment scheduling technique that builds a schedule by proceeding sequentially from the initial period to the final period while observing capacity limits. A Gantt chart may be used with this technique. See: finite loading.

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Term
Forward scheduling

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Term
Internal setup time

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Term
Job sequencing rules

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Job shop scheduling

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Term
Job status

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Term
Lead time

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Term
Limiting operation

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Term
Machine hours

The time associated with elements of a setup procedure performed while the process or machine is not running. Ant: external setup time.

A scheduling technique where the scheduler proceeds from a known start date and computes the completion date for an order, usually proceeding from the first operation to the last. Dates generated by this technique are generally the earliest start dates for operations. See: forward pass. Ant: back scheduling.

The production planning and control techniques used to sequence and prioritize production quantities across operations in a job shop.

A set of priorities and conditions that specify the order in which jobs are processed because of scarce resources.

1) A span of time required to perform a process (or series of operations). 2) In a logistics context, the time between recognition of the need for an order and the receipt of goods. Individual components [...] can include order preparation time, queue time, processing time, move or transportation time, and receiving and inspection time. Syn.: total lead time. See: manufacturing lead time, purchasing lead time.

A periodic report showing the plan for completing a job (usually the requirements and completion date) and the progress of the job against that plan.

The amount of time, in hours, that a machine is actually running. [These], rather than labor hours, may be used for planning capacity for scheduling and for allocating costs.

The operation with the least capacity in a series of operations with no alternative routings. The capacity of the total system can be no greater than [this. As long as this...] exists, the total system can be effectively scheduled by scheduling [this concept] and providing this operation with proper buffers. See: protective capacity, protective inventory.

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Section A: Planning Detailed Schedules

Term
Master route sheet

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Section A: Planning Detailed Schedules

Term
Move time

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Term
One less at a time

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Term
Operation due date

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Operation setback chart

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Term
Operation start date

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Term
Operation time

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Term
Operations sequencing

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The time that a job spends in transit from one operation to another in the plant.

The authoritative route process sheet from which all other format variations and copies are derived.

1) The date when an operation should be completed so that its order due date can be met. It can be calculated based on scheduled quantities and lead times. 2) A job sequencing algorithm (dispatching rule) giving earlier operation due dates higher priority.

A process of gradually reducing the lot size of the number of items in the manufacturing pipeline to expose, prioritize, and eliminate waste.

The date when an operation should be started so that its order due date can be met. Can be calculated based on scheduled quantities and lead times or on the work remaining and the time remaining to complete the job.

A graphical display of the bill of materials and lead-time information provided by the routing for each part. The horizontal axis provides the lead time from raw materials purchase to component manufacture to assembly of the finished product.

A technique for short-term planning of actual jobs to be run in each work center based upon capacity (i.e., existing workforce and machine availability) and priorities. The result is a set of projected completion times for the operations and simulated queue levels for facilities.

The total of setup and run time for a specific task. Syn.: operation duration.

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Term
Order priority

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Term
Overlapped schedule

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Term
Primary work center

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Term
Priority control

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Term
Process batch

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Term
Production activity control (PAC)

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Term
Production rate

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Term
Production schedule

A manufacturing schedule that “overlaps” successive operations. Overlapping occurs when the completed portion of an order at one work center is processed at one or more succeeding work centers before the pieces left behind are finished at the preceding work centers. Syn.: lap phasing, operation overlapping, telescoping. See: send ahead. Ant: gapped schedule, overlapped production.

The scheduled due date to complete all the operations required for a specific order.

The process of communicating start and completion dates to manufacturing departments in order to execute a plan. The dispatch list is the tool normally used to provide these dates and priorities based on the current plan and status of all open orders.

The work center where an operation on a manufactured part is normally scheduled to be performed. Ant: alternate work center.

The function of routing and dispatching the work to be accomplished through the production facility and of performing supplier control. [It] encompasses the principles, approaches, and techniques needed to schedule, control, measure, and evaluate the effectiveness of production operations. See: shop floor control.

The quantity or volume of output that is to be completed at a workstation before switching to a different type of work or changing an equipment setup.

A plan that authorizes the factory to manufacture a certain quantity of a specific item. Usually initiated by the production planning department.

The rate of production usually expressed in units, cases, or some other broad measure, expressed by a period of time (e.g., per hour, shift, day, or week). Syn.: production level.

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Term
Queue

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Term
Queue management

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Queue time

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Term
Run time

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Term
Safety capacity

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Term
Sequencing

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Term
Setup

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Term
Setup time

Tactics to deal with an excess number of items, such as products or customers, waiting in line for service.

A waiting line. In manufacturing, this refers to the jobs at a given work center waiting to be processed. As queues increase, so do average queue time and work-in-process inventory.

The time required to process a piece or lot at a specific operation. [This] does not include setup time. Syn.: run standards.

The amount of time a job waits at a work center before setup or work is performed on the job. [It] is one element of total manufacturing lead time. Increases in [this] result in direct increases to manufacturing lead time and work-in-process inventories.

Determining the order in which a manufacturing facility is to process a number of different jobs in order to achieve certain objectives.

In the theory of constraints, the planned amount by which available capacity exceeds current productive capacity. This capacity provides protection from planned activities (such as resource contention) and preventive maintenance and unplanned activities (such as resource breakdown, poor quality, rework, or lateness). [This] plus productive capacity plus excess capacity equals 100 percent of capacity. Syn.: capacity cushion. See: protective capacity.

The time required for a specific machine, resource, work center, process, or line to convert from the production of the last good piece of item A to the first good piece of item B. Syn.: setup lead time.

1) The work required to change a specific machine, resource, work center, or line from making the last good piece of item A to making the first good piece of item B. 2) The refitting of equipment to neutralize the effects of the last lot produced (e.g., teardown of the just-completed production, preparation of the equipment for production of the next scheduled item). Syn.: changeover, turnaround time.

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Term
Throughput

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Term
Transit time

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Term
Visual management

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Term
Wait time

A standard allowance that is assumed on any given order for the movement of items from one operation to the next. Syn.: travel time.

The rate at which the system generates “goal units.” Because [this] is a rate, it is always expressed for a given time period—such as per month, week, day, or even minute. If the goal units are money, [this] is an amount of money per time period. In that case, [it] is calculated as revenues received minus totally variable costs divided by units of the chosen time period.

The time a job remains at a work center after an operation is completed until it is moved to the next operation. It is often expressed as a part of move time.

A management system whereby every metric that matters, standardized work, and improvement approaches are displayed on the shop floor and in the office.