

## **Solving Process Planning, Weighted Earliest Due Date Scheduling and Weighted Due Date Assignment Using Simulated Annealing and Evolutionary Strategies**

**Authors :** Halil Ibrahim Demir, Abdullah Hulusi Kokcam, Fuat Simsir, Özer Uygun

**Abstract :** Traditionally, three important manufacturing functions which are process planning, scheduling and due-date assignment are performed sequentially and separately. Although there are numerous works on the integration of process planning and scheduling and plenty of works focusing on scheduling with due date assignment, there are only a few works on integrated process planning, scheduling and due-date assignment. Although due-dates are determined without taking into account of weights of the customers in the literature, here weighted due-date assignment is employed to get better performance. Jobs are scheduled according to weighted earliest due date dispatching rule and due dates are determined according to some popular due date assignment methods by taking into account of the weights of each job. Simulated Annealing, Evolutionary Strategies, Random Search, hybrid of Random Search and Simulated Annealing, and hybrid of Random Search and Evolutionary Strategies, are applied as solution techniques. Three important manufacturing functions are integrated step-by-step and higher integration levels are found better. Search meta-heuristics are found to be very useful while improving performance measure.

**Keywords :** process planning, weighted scheduling, weighted due-date assignment, simulated annealing, evolutionary strategies, hybrid searches

**Conference Title :** ICETET 2017 : International Conference on Emerging Trends in Engineering and Technology

**Conference Location :** Tokyo, Japan

**Conference Dates :** September 07-08, 2017