SPECIAL NOTE: The design of this course is such that topics in "Managing Research" and "Managing Design" serve as potential topics for team research projects and presentations. Consequently, instructor notes are limited to an extremely brief overview.

MANAGING

ENGINEERING

RESEARCH

AND

DESIGN

TGC 8-01

DEFINITION OF TERMS

RESEARCH
directed toward achievement and/or application of knowledge

DEVELOPMENT
use of research results to produce something

DESIGN
creating a model of something new

BJC 8-02

CYCLES AND PHASES

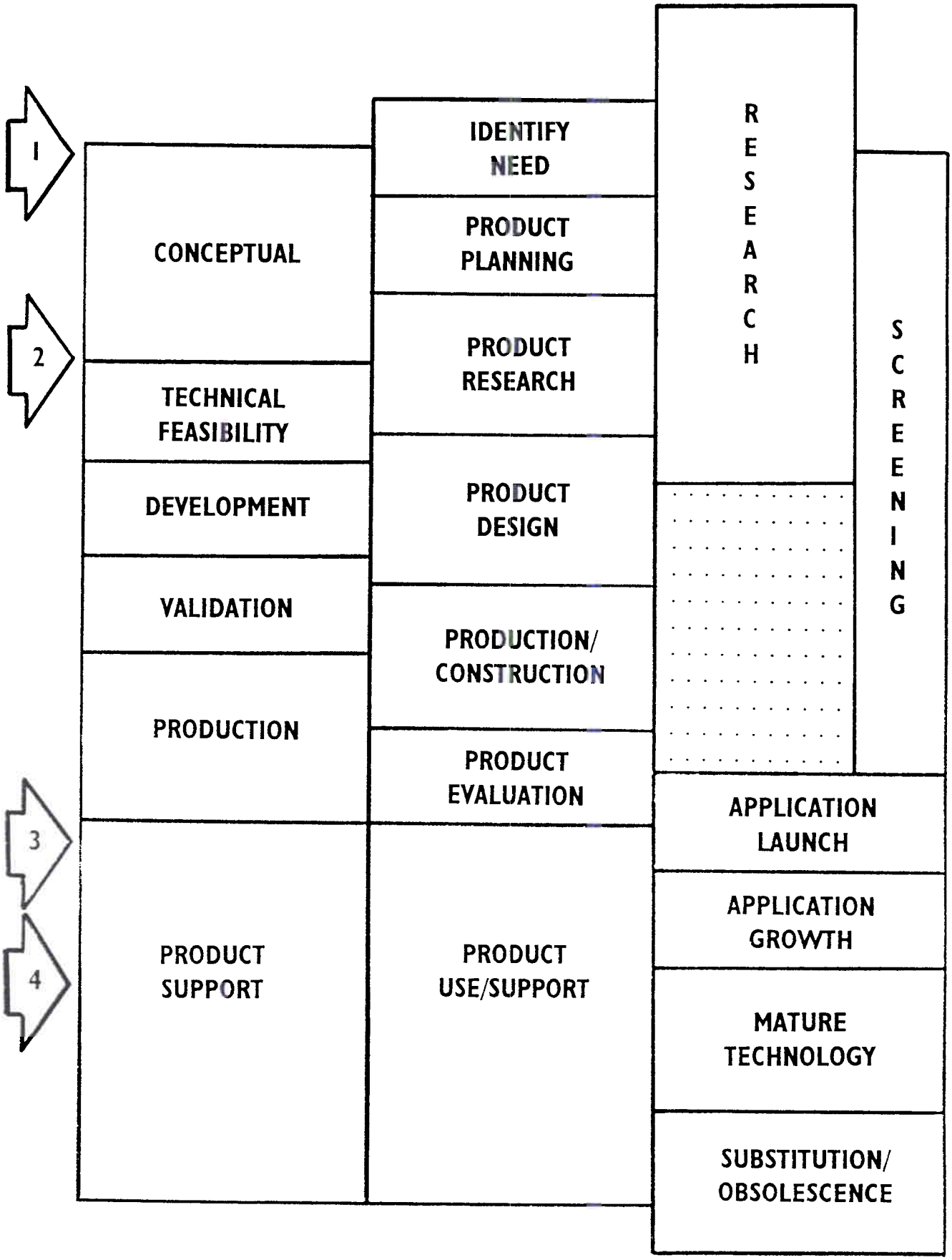
Product Life Cycle

Technology Life Cycle

New Product Development Phases

Systems Engineering Phases

BQC 8-03


1
2
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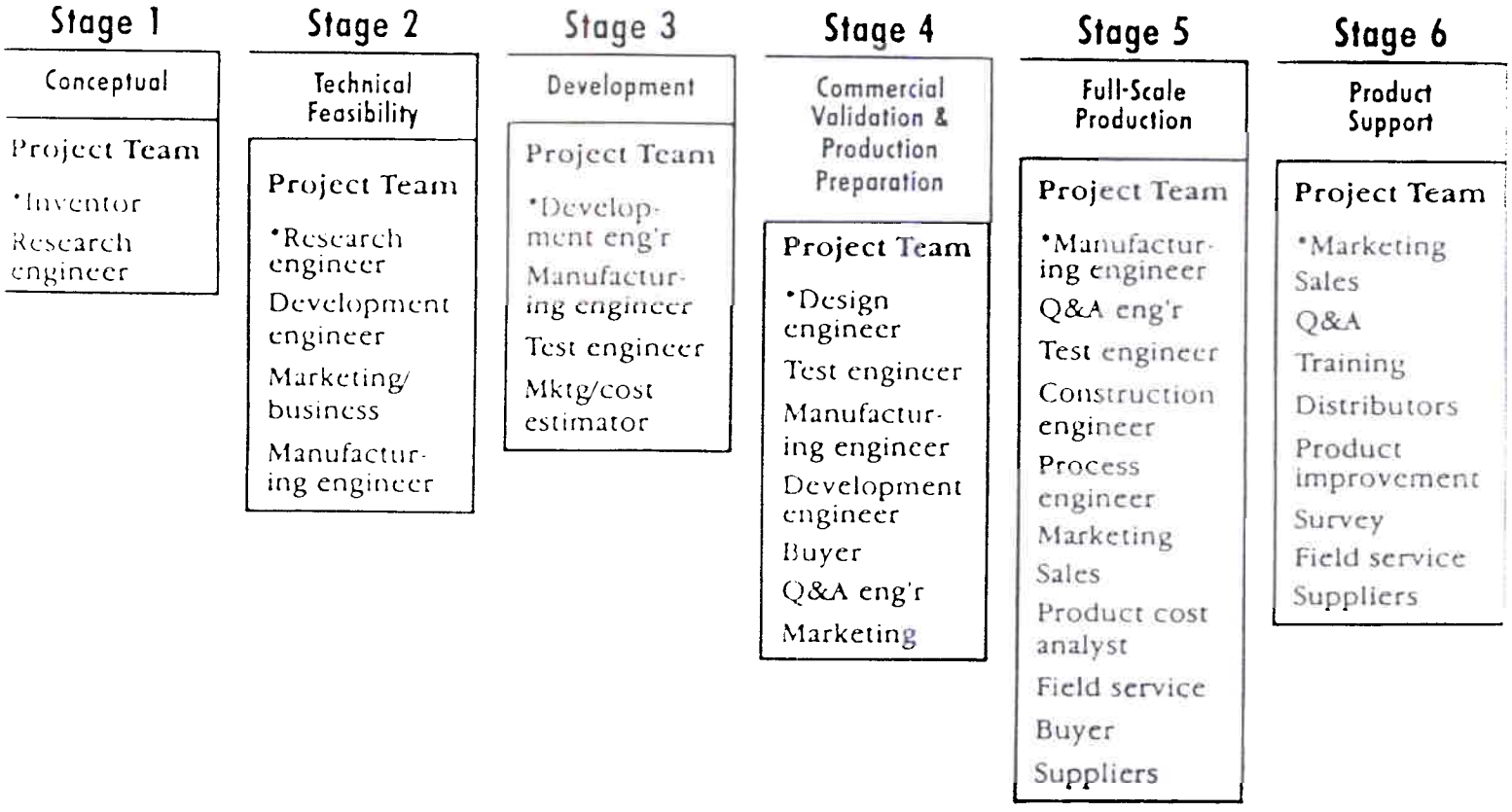
CONCEPTUAL
TECHNICAL FEASIBILITY
DEVELOPMENT
VALIDATION
PRODUCTION
PRODUCT SUPPORT
IDENTIFY NEED
PRODUCT PLANNING
PRODUCT RESEARCH
PRODUCT DESIGN
PRODUCTION/ CONSTRUCTION
PRODUCT EVALUATION
PRODUCT USE/SUPPORT
RESEARCH
SCREENING
APPLICATION LAUNCH
APPLICATION GROWTH
MATURE TECHNOLOGY
SUBSTITUTION/ OBSOLESCENCE

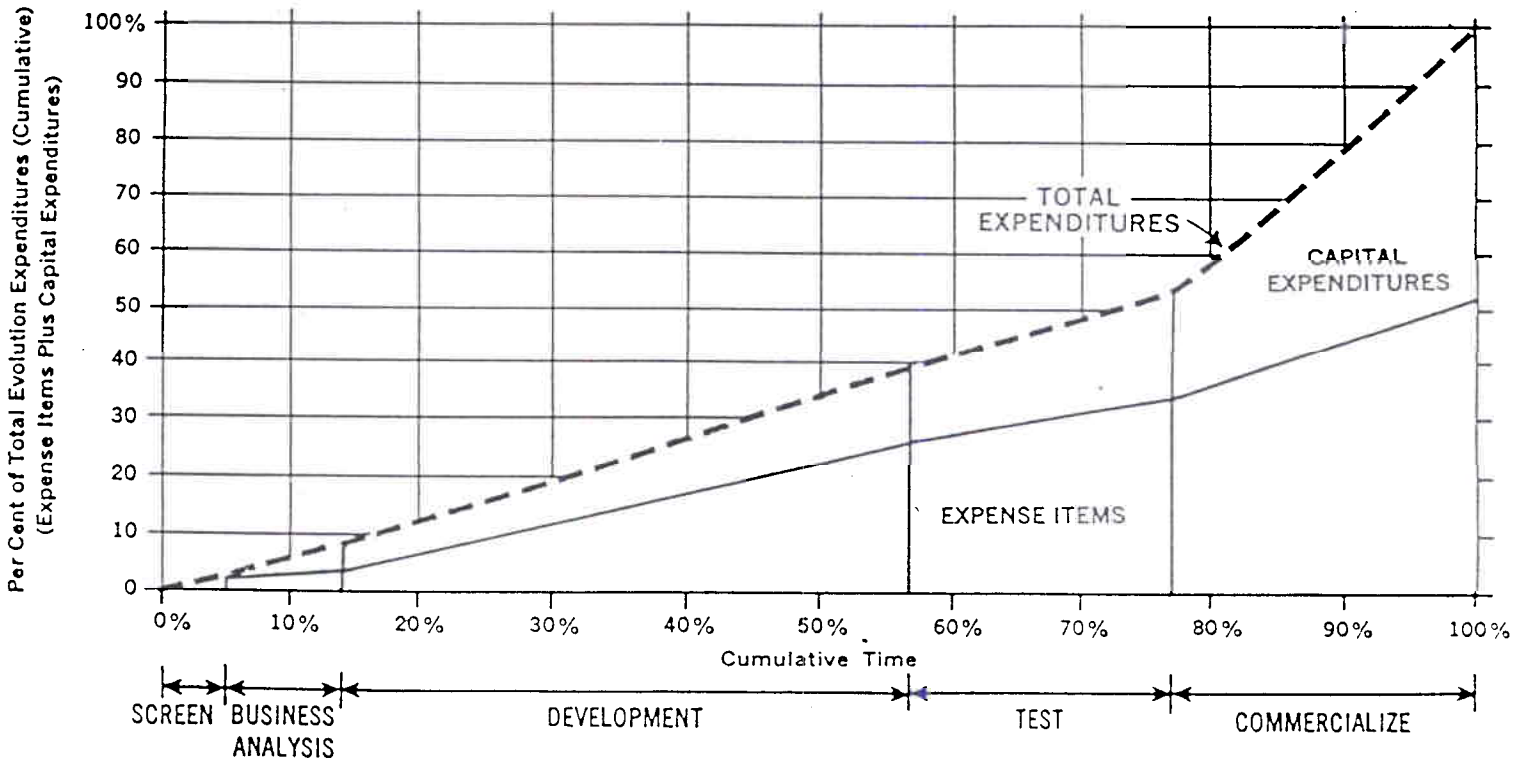
BJC 8-04

CONCURRENT
or
SIMULTANEOUS
ENGINEERING
(NSPE Phases)



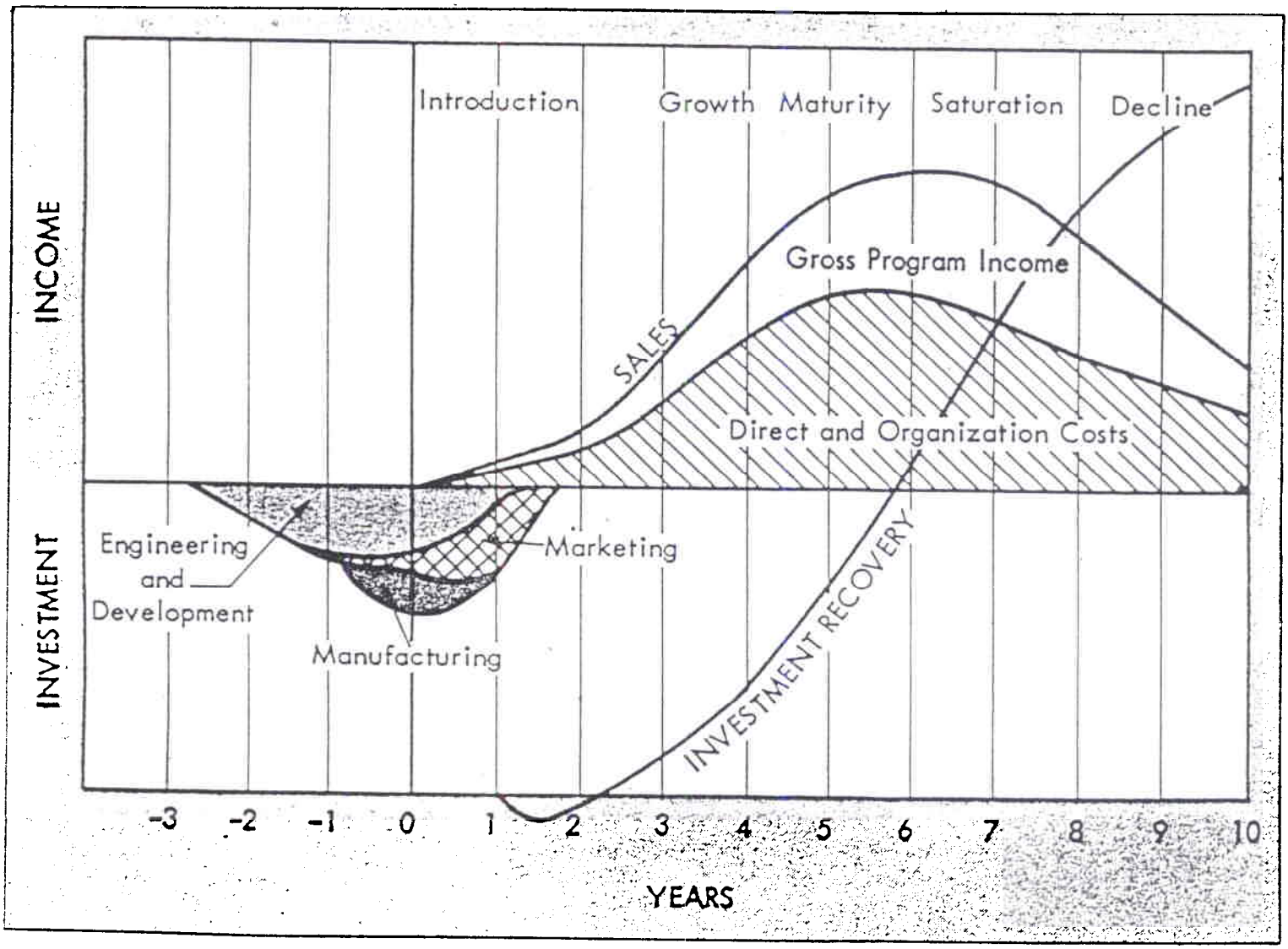
BQC 8-05

PRODUCT DEVELOPMENT TIME and COST



Bgc 8-06

PRODUCT DEVELOPMENT INVESTMENT RECOVERY



BJC 8-07

PROTECTION OF IDEAS

Patents
Utility, Design, Plant

Marks
Trade, Service, Certification, Collective

Copyrights

Trade Secrets

BQL 8-08

"THE ILITIES"
PART ONE

RELIABILITY

The probability that a system will demonstrate specified performance for a stated period of time when operated under specified conditions

MAINTAINABILITY

The probability that a failed system will be restored to specified performance within a stated period of time when maintained under specified conditions

AVAILABILITY

The probability that a system, when used under specified conditions, will operate satisfactorily at any point in time when called upon to do so

BJC 8-09

"THE ILITIES"
PART TWO

LIABILITY

Legal responsibility for all aspects of performance, most frequently with respect to safety

ERGONOMICS

Application of biological and engineering data to problems of relating people and machines

PRODUCIBILITY (DFM, DFA)

The extent to which the product can be produced, and produced as economically as possible

VALUE ANALYSIS

Assessment of product components for the purpose of decreasing life cycle costs

BgC 8-10