

S.72-143

# SIMON FRASER UNIVERSITY

## MEMORANDUM

To SENATE

From SENATE COMMITTEE ON UNDERGRADUATE  
STUDIES

Subject FACULTY OF ARTS - NEW UNDERGRADUATE  
COURSE PROPOSAL - PSYCHOLOGY 321-3

Date NOVEMBER 15, 1972

MOTION: "That Senate approve, as set forth in S.72-143,  
the new undergraduate course proposal of the  
Department of Psychology, Psychology 321-3 -  
Intelligence and Creativity."

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Subject FACULTY OF ARTS - NEW UNDERGRADUATE COURSE PROPOSAL - PSYCHOLOGY 321-3

Date NOVEMBER 15, 1972

On recommendation of the Faculty of Arts, the Senate Committee on Undergraduate Studies approved the new undergraduate course proposal, Psychology 321-3, as set forth in SCUS 72-31g, and recommends approval to Senate, as follows:

Psychology 321-3 - Intelligence and Creativity

F. 72-14  
SCUS72-319.

FACULTY OF ARTS

September 1971

NEW COURSE PROPOSAL

1. CALENDAR INFORMATION

Department: PSYCHOLOGY      Course Number: 321      Title: Intelligence and Creativity  
Sub-title or Description: Surveys recent empirical and theoretical research on the nature and development of intelligence and creativity. Topics covered will include: the measurement of intelligence and creativity; the role of heredity and environment in the development of intelligence and creativity; the relation between intelligence, learning and thinking; the relation between intelligence and achievement.  
Credit Hours: 3      Vector Description: intelligence, creativity and achievement.  
Pre-requisite(s): (2-0-2)  
Psych 101-3. Recommended: one of Psych 201-3, Psych 210-3, Economics 332-3, Bioscience 202-3.

2. ENROLMENT AND SCHEDULING

Estimated Enrolment: 40  
Semester Offered (e.g. yearly, every Spring; twice yearly, Fall and Spring):  
Once per year, in Fall or Spring Semester.  
When will course first be offered?  
Fall 1973 or Spring 1974.

3. JUSTIFICATION

- A. What is the detailed description of the course including differentiation from lower level courses, from similar courses in the same department, and from courses in other departments in the University? The course takes a developmental and quantitative approach to the psychology of intelligence and creativity. Although it is related to Psych 310 (measurement), Psych 351 and 355 (developmental psychology) and Psych 320 (cognition) it differs from these courses in that the psychological content of measures rather than the statistics of measurement is emphasized and developmental and cognitive principles are used, rather than developed, in order to understand intelligence and creativity. There is no overlap of content with other courses in the department or university.
- B. What is the range of topics that may be dealt with in the course? The course is designed to provide an understanding of the psychology of intelligence and creativity and is not a course in how to be creative. Topics covered include: constructing explanations of human individuality, the nature and development of intelligence and creativity, genetic and environmental factors in the development of intelligence and creativity. The labs will be concerned with the psychogenetics and measurement of intelligence and creativity.

- C. How does this course fit the goals of the department?

It broadens the program while staying within the experimental theoretical orientation of the department.

- D. How does this course affect degree requirements?

In no way.

- E. What are the calendar changes necessary to reflect the addition of this course?

Entering of the course description in the calendar

- F. What course, if any, is being dropped from the calendar if this course is approved?

None

- G. What is the nature of student demand for this course?

Although the course is primarily designed for psychology majors it should be of interest to education, commerce, sociology and biology students. The course is to be given once a year and enrolment should be about 40 students.

- H. Other reasons for introducing the course.

4. BUDGETARY AND SPACE FACTORS

A. Which faculty will be available to teach this course?

Dr. Charles Crawford

B. What are the special space and/or equipment requirements for this course?

None, other than those now possessed by the department.

C. Any other budgetary implications of mounting this course:

Approval:

Curriculum Committee:

*Oct. 19/72*

Dean of Faculty:

Senate Undergraduate  
Studies Committee:

Senate:

## Proposal for Course in Intelligence and Creativity

### Psychology 321-3 - Intelligence and Creativity

Surveys recent empirical and theoretical research on the nature and development of intelligence and creativity. Topics covered will include: the measurement of intelligence and creativity; the role of heredity and environment in the development of intelligence and creativity; the relation between intelligence, learning and thinking; the relation between intelligence, creativity and achievement.

(2-0-2)

Prerequisite: Psych 101, one of Psych 201, Psych 210, Math 101,  
Economics 332, Biology 202 recommended.

Course Outline: See attached course outline.

Possible Texts: See list of recent relevant books at the end of the course outline.

#### Relation to Other Psychology Courses

The course is basically a course in theoretical differential psychology with special emphasis on intelligence and creativity. The emphasis is to be developmental and quantitative. It will resemble traditional third or fourth year courses in differential psychology in that it will focus on explaining and understanding human individuality. But, it will differ in two ways from such courses. First, no attempt will be made to catalogue all individual and group differences in intelligence and creativity since it will be assumed that students are aware that such differences exist. Second, the use of material from areas such as learning, motivation, perception, cognition and personality for developing explanations of human individuality will be emphasized.

The course differs from Psych 105 in that Psych 105 provides a survey of

individual and group differences in intelligence, aptitudes, personality, attitudes and values as well as some elementary attempts to measure and explain these differences while Psych 321 is to provide a sophisticated treatment of the psychological, biological and sociological basis of individual differences in intelligence and creativity. The course will be related to Psych 351 and 355 and Psych 305 and 310 since the emphasis is to be developmental and quantitative. It will differ from the developmental since the application of principles of psychological development will be emphasized rather than the development of these principles. A thorough examination of Piaget's theories, for example, more properly belongs in courses in developmental and cognitive psychology. The course will differ from the measurement courses in that the psychological content of items rather than their statistical properties will be emphasized. The course is complementary to Psych 340 in that it is focused in important aspects of the functioning of normal and superior individuals.

#### Audience

Although this course is primarily designed for Psychology majors it should be attractive to education, commerce, and sociology students. The strong emphasis on genetics might make it attractive to biology students.

Instructor: Charles Crawford.

A copy of my curriculum vitae is attached. I recently received a Canada Council grant to begin a program of research on intelligence, creativity and personality. The grant proposal is available to anyone who wishes more details about the orientation and style of the course. I have also organized a symposium on the role of cultural and biological factors in cognition for the next meeting of the Canadian Psychological

Association. Philip Vernon and Russel MacArthur are to be among the participants. The course will be relative to some of the research that I will be doing during the next few years.

Frequency of Offering

Once per year.

Staffing

I now give Psych 105 twice a year. Dr. Ames has stated that she would like to give it once a year. I would like to propose, therefore, that I give Psych 105 once a year and Psych 321 once a year. During my absence either Dr. Ames or Dr. Coles might be able to give the proposed course.

Equipment

No special or new equipment would be required.

## Course Outline

### Psychology 321-3 Intelligence and Creativity

Recent experimental and theoretical research on the nature and development of intelligence and creativity. Topics covered will include the measurement of intelligence and creativity; the role of heredity and environment in the development of intelligence and creativity; the relation between intelligence, learning and thinking; the relationship between intelligence, creativity and achievement.

(2-0-2)

PART ONE; Introduction to the study of individual differences in intelligence and creativity.

1. The nature of ability traits.
  - i) The descriptive aspect of ability traits.
  - ii) The functional aspect of ability traits.
  - iii) The role of ability traits in psychological theory.
2. Modes of exploration.
  - i) Correlations and components of variance.
  - ii) Ability trait models; hierarchical, facet, lattice, etc.
3. Behavioral genetics.
  - i) Mendelian genetics; the genetics of discrete traits.
  - ii) Quantitative genetics; the genetics of continuous traits.
  - iii) The route from genes to behavior.

PART TWO: Intelligence.

1. Nature and definition of intelligence.
  - i) Intelligence and learning.
  - ii) Intelligence and thinking.
2. The structure of intelligence.
  - i) Theories of Spearman, Burt and Vernon.

- ii) Theories of Thurstone and Guilford.
- iii) Critique of these theories.
- 3. The development of intelligence.
  - i) Hebb's intelligence A and B
  - ii) Cattell's and Horn's fluid and crystallized intelligence.
  - iii) Developmental work of Bayley, Horn, etc.
  - iv) Ferguson's transfer of training theory.
  - v) The genetics of intelligence, Jensen, Burt, etc.
- 4. Implications.
  - i) Intelligence and scholastic achievement.
  - ii) Intelligence and job success.

PART THREE: Creativity.

- 1. Nature and definition of creativity.
  - i) Definitions of Torrance, Mednick, Guilford, etc.
  - ii) First person accounts, i.e. Mozart, Tchaikovsky, Spender, Poincare, Watson.
- 2. Methodological problems in the study of creativity.
- 3. The relation between creativity and intelligence.
- 4. Creativity and personality.
- 5. Scientific achievement and creativity.

PART FOUR: Integrations and conclusions.

## LABS

### Part One. Introduction

- Lab 1 Review of correlation
- 2 Simple analysis of variance
- 3 and 4 Quantative genetics.

### Part Two. Intelligence

- Lab 5 Methods and concepts of measurement.
- 6 Individual tests with emphasis of how items tap intelligence.
- 7 Group tests of intelligence.
- 8 Other methods of measuring intelligence; i.e. transfer of training, learning ability, culture fair material.

### Part Three. Creativity.

- Lab 9 and 10 Methods and approaches to the measurement of creativity.

Possible Texts

- Butcher, H. J. Human intelligence: its nature and assessment, London, Methuen, 1968.
- Cancro, Robert (Ed.). Intelligence: genetic and environmental influences, New York, Gruen and Stratton, 1970.
- Cattell, R. B. Abilities: their structure growth and action, New York, Houghton Mifflin, 1971.
- Cattell, R. B. and Butcher, H. J. The prediction of achievement and creativity, Indianapolis, Bobbs-Merrill, 1968.
- Guilford, J. P. The nature of human intelligence, New York, McGraw-Hill, 1967.
- Guilford, J. P. and Hoepfner, R. The analysis of intelligence.
- Hudson, Liam (Ed.) The ecology of human intelligence, London, Penguin, 1970.
- Hunt, J. McV. Intelligence and experience. New York, Ronald Press, 1961.
- Jenkins, J. J. and Patterson, D. G. (Ed.) Studies in individual differences: the search for intelligence, New York, Appleton-Century-Crofts, 1961.
- Tyler, Leona. Intelligence: some recurring issues, New York, Von Nostrand, 1969.
- Vernon, P. E. Intelligence and cultural environment, London, Methuen, 1969.
- Vernon, P. E. (Ed.) Creativity: selected readings, London, Penguin, 1970.
- Wiseman, Stephen (Ed.). Intelligence and ability, London, Penguin, 1967.