

## Basic study year

### 1.1 GENERAL

The basic study year serves to orient, select, and refer. For this reason, not only a representative picture of psychology and its basic disciplines is presented but also an overview of the subjects that can be majored in and the educational approach utilized at Maastricht University. The design of the basic study year involves, in addition to six regular courses, an initial five-week introductory course.

The first three courses are devoted to the themes Social behavior, Body and behavior, and Perception. The third course is completed prior to the Christmas break. The course Social behavior provides an introduction to social psychology and practice with problem-based learning. The course Body and behavior shows how biological mechanisms determine and influence behavior. Course

1.3 Perception provides an introduction to perceptual psychology.

In course 1.4, Human cognition, cognitive psychology stands central. In the course Development and growth, human development is studied from not only a cognitive but also a biological perspective. In course 1.6, Differences

between people, the question of what makes people differ is considered. The basic study year is concluded with a course in which the discipline of psychology is placed within its historical context, namely course 1.7 History and theory.

Parallel to every course and lectures are practicals in which skills connected to the material presented in the lectures are acquired and practiced. In the course descriptions, the specific objectives and content of the practicals are also presented. More detailed information can be found in the syllabus for a particular course.

After completion of a course, a so-called course examination is administered. This can consist of open questions or a combination of open questions and multiple choice questions, with each portion counting for 50% of the exam result.

The parallel program (which is not course related) during the basic study year involves methods and techniques, statistics, and computer skills.

## 1.2 OVERVIEW OF BASIC STUDY YEAR

Course	Practical test	Additional study
1.1 Social behavior	Training for problem-based learning; PC-use; observational training	Library training; RM&T 1a
1.2 Body and behavior	Psychophysiology	RM&T 1a Statistics 1a Email/Internet
1.3 Perception	Cognitive ergonomics; smell practical	Statistics 1a Word CD-ROM
1.4 Human Cognition	Cognitive test methods	Statistics 1a End-note
1.5 Development and Growth	Observation of children	Statistics 1b Essay
1.6 Differences between people	Measurement of psychological differences	Statistics 1b
1.7 History and Theory	Essay writing	RM&T 1b

\*All courses in year 1 are offered in Dutch

### 1.2.1 Description of the courses

#### Course 1.1 Social Behavior

(August 23 - September 24 1999, 6 ects)

Course coordinator: Peter Vermeer, Neurocognition

#### Objectives

The first course is shorter than usual (five weeks: faculty introduction + four weeks) and has a dual objective: To provide a brief introduction to social psychology and to practice with the problem-based learning system on a number of social psychology tasks.

*Further description of the course*

Education at Maastricht University is based on the method of problem-based learning. In order to function well within this educational system, which clearly differs from traditional educational methods, some knowledge of the background and key elements is essential along with training on a number of basic skills. The basic introduction (which is part of this course) starts with the skills necessary to work within the tutorial group meetings. The topics to be used in this training are drawn from social psychology, the theme of this course. Half way through the first week, the training shifts to regular tutorial group meetings.

Human behavior is largely geared to and determined by interaction with other people. In this course, not only the biological roots of social behavior but also the typical human aspects will be considered.

The course begins with a few of the classical themes from social psychology: conformity, attitudes and attitude change, cognitive dissonance, and the manner in which people deal with cognitive conflict. Thereafter, the manner in which facial expressions, emotions, and behavior influence each other will be considered. Finally, human ethnology will be examined in connection with the themes of sexuality and aggression.

*Essential reading*

- Gleitman, H. (1995). *Psychology* (fourth edition). New York: W. W. Norton & Company. Part 4 in particular.
- Hayes, N. (1994). *Principles of comparative psychology*. Hove (UK): Lawrence Erlbaum Associates..
- Various articles

*Practical*

Coordinator: Wijnand Raaijmakers, Neurocognition.

Objectives: To gain knowledge of the methods used to observe behavior. In the observation practical, use is made of ethological video material; after viewing the material and some introductory training, the students make their own observations and score the material.

**Course 1.2 Body and behavior**

(September 27 - November 5 199, 6 ects )

Course coordinator: Jelle Jolles, Biological psychology

*Objectives*

The course Body and behavior provides an introduction to some important topics from biological psychology. An important goal is to provide insight into the

biological psychology. An important goal is to provide insight into the biological bases of psychological phenomena. Sleep, vigilance, and dreaming are important to human functioning. This also holds for eating, drinking, and sexuality. Biological processes are closely associated to psychological processes and social influences.

Together, these processes determine our experience, behavior, thinking, consciousness, and emotions. Course 1.2 is intended to provide examples of this and insight into the relations between physical processes and behavior. Stated briefly, the objectives are as follows:

- to acquire knowledge of physical processes that play a role in experience and behavior;
- to gain insight into psychological processes (jointly) determined to an important extent by biological mechanisms; and
- to recognize which biological processes in addition to psychological and social factors influence experience and behavior.

*Further description of the course*

A total of 12 tasks are devoted to the following topics: structure of the brain building courses of the brain, brain development, the biological clock; sleeping and dreaming; memory, medications, and behavior; hormones and behavior; and sexuality. In addition to the case study, considerable space will be devoted to practicals. Lectures will also present more in-depth information on the case studies. The practicals are intended to provide greater insight into brain-behavior relations. A close connection exists between the material in the practicals and that which is presented in the lectures and tasks for the tutorial group meetings.

*Essential reading*

To be announced.

*Practical*

Coordinators: Harry Steinbusch, Psychiatry and Neuropsychology, tel. 3881021, Universiteitssingel 50, rm. 1.01a, and Eric Vuurman, Psychiatry and Neuropsychology, tel. 3886147, P. Debyeelaan 25, Lab B1.

Objectives: To provide insight into the relation between brain and behavior; knowledge of brain anatomy.

This practical session is divided into two parts. In the first part, the student works with models of the brain. The practical serves to provide the student with insight into the three-dimensional structure of the brain and the location of the most important neuro-anatomical structures. The second part is concerned with psychophysiology. By tracing the activity of the brain and that of the heart, one can learn more about the relation between mental effort and psychophysiological methods used to do this.

*Instructional form*  
12 tutorial group meetings, 6 lectures, 4 practicals.

*Examination form*  
Combination of 5 open and 50 multiple choice questions.

**Course 1.3 Perception**  
( November 8 - December 17 1999, 6 ects )

Course coordinator: Fren Smulders, Experimental Psychology.

*Objectives*

Introduction to the psychology of perception and its application.

*Further description of the course*

The psychology of perception is perhaps the best developed branch of psychology. Behavioral studies, neuroscientific research, and advances in artificial intelligence and robotics contribute further every year. The biological substrate of visual perception; the perception of color, contrast, and depth; illusions; (perceptual) attention; perceptual development; and perception in animals are a few of the themes that will be addressed. In addition to visual perception, auditory perception will also be considered in the course. Furthermore, the students will become acquainted with our chemical senses in one of the practicals. Knowledge of the capacities of and limitations on the human perceiver will also be shown to help us arrange our world in a better fashion.

*Essential reading*

- Goldstein, E.B. (1998). *Sensation and perception* (fifth edition). Pacific Grove, CA: Bruce/Cole.
- Gleitman, H. (1995). *Psychology* (fourth edition). New York: W. W. Norton & Company. Chapters 5, 6, and 7.

*Practical meetings*

Coordinator: Fren Smulders, Experimental Psychology.

*Objectives:* Smell practical: a penetrating acquaintance with the perception of smells.  
Coordinator: Annemiek Vermeeren, Experimental Psychology.  
*Objectives:* Cognitive ergonomics practical: To examine the manner in which insights from the psychology of perception can help us arrange our surroundings. Acquaintance with the manner in which reaction time research can provide insight into this.

*Instructional form*

12 tutorial group meetings, 4 lectures, 1 lecture, audiovisual materials, 2 practical meetings.

*Examination form*  
20 short-answer questions. Practical meetings: Specific task assignments.

**Course 1.4 Human cognition**  
(January 3 - February 11 2000, 6 ects )

Course coordinator: Henk Schmidt, Experimental Psychology.

*Objectives*

This course provides an introduction to central cognitive processing: comprehension, knowledge acquisition and knowledge representation, memory, thinking, and problem solving

The students become acquainted with the classical model of the information processing system, which lies at the foundation of the aforementioned processes.

*Further description of the course*

Human cognition can be construed as the "fast track" for adaptation to changing circumstances in our environment and thus in contrast to the "slower" methods of genetic mutation and (operant) learning. We begin the course with an introduction to the topic of attention. How does our attention help us deal with the information from our external and internal environment in an efficient manner, and what happens when our attention fails? Knowledge and knowledge representation constitute a second topic. The relevant questions here are: In what manner do we internally represent information from our environment, and how do we use this knowledge to interpret the world around us? The structure and functioning of our memories constitute a third topic. How is information remembered in the short and long term? What exactly happens when we "call up" memories? What do neuropsychologists have to say to us about this? The final topic concerns thinking and reasoning. Can certain patterns or laws be detected in our reasoning? How do the expert and the novice within a particular domain think? The following topics will also be touched upon:

- divided attention;
- memory: distinction between short-term ("working") memory and long-term memory/distinction between episodic and semantic memory;
- semantic memory: the Collins/Quillian/Loftus model: spreading activation; schemata and scripts;
- retrieval mechanisms;
- neurocognition: amnesia;
- judgment and reasoning: heuristics; syllogistic reasoning; deductive reasoning; problem solving; the Gestalt approach; means-end analyses; the role of analogies; the role of knowledge; the computational approach.

*Essential reading*

- Sternberg, R.J. (1996). *Cognitive Psychology*. Fort Worth: Harcourt Brace
- College Publishers.
- Various articles

*Practical*

**Coordinator:** Peter Houx, Biological Psychology.

**Objectives:** Within this course, the practical consists of four sessions and will be conducted on the topic of human cognition. The purpose is to acquaint the student with the different experimental arrangements used in the domain of complex cognition and obviously supplement the reading for this course.

During the sessions, a number of frequently used experimental and clinical paradigms will be considered. The practical covers:

- Timing of processes: mental rotation (Shepard & Metzler), Stroop color-word test, and an alternative test for selective attention.
- (Working) memory: semantic memory, memory span tests with and without chunking, Brown-Peterson.
- Planning, executive function: Tower of London, Watson selection task.
- Response latency and divided attention: clinically useful response latency, Paced Serial Task.

In the articles which are to be read and during a lecture, the experimental possibilities for these tasks will be described and just what their clinical neuropsychological use entails. Age norms will be presented, and the students will then test a number of fellow students. A brief summary of the results will then be compared to the normative values for the group to which the students belong.

*Instructional form*

12 tutorial group meetings, 10 lectures, 4 practical meetings.

*Examination form*

A combination of open-ended questions and regular questions, also regarding parts of the practicals. For the practicals, attendance and writing up research results also count. Evaluation of the report is done along a four-point scale: good, adequate, dubious, inadequate.

**Course 1.5 Development and growth**

(February 14 -March 31 2000, 6 ects )

**Course coordinator:** Anita Jansen, Experimental Psychology.

*Objectives*

During this course, the student learns how children develop psychologically. Of particular interest will be how their thinking, reasoning, memory, language, gender identities, and emotions develop over the years. Considerable attention will be paid to such learning processes as habituation, classical conditioning, operant conditioning, and social learning. Also, a number of developmental disorders such as autism and ADHD (Attention Deficit Hyperactivity Disorder) will be examined

*Further description of the course*

The development of and changes in psychological functions from birth through adolescence are the topic of this course. Just how children learn to think, reason, and remember (or their cognitive development) will be examined, and such influential older theories as that of Piaget will be compared to more recent informational processing models of development. How does a child reason? How does a child learn to think faster and better? And why can an adult remember more than a child? In addition to these questions, attention will be paid to language development, the development of gender identity, and attachment. It is amazing to see how a newborn baby who does not understand a word and cannot say anything learns to talk within the space of two or three years without, incidentally, the use of dictionaries or grammar books. The three-year old child also suddenly discovers that he or she is a boy or girl, but when does he or she really start acting like a boy or girl? And how does this happen? Yet another important question is how we form attachments and with whom? Is attachment important? Do our early attachments influence our later emotional development? And what is the course of development? When is an active young boy normal and when do we say that he has an attentional disorder?

In addition to the aforementioned themes, a major part of the course will be devoted to learning processes. Learning is an important form of development, and children continually learn under the influence of punishment, reward, and example. Just how does this occur? The world famous, mouth-watering dog of the Russian physiologist Ivan Pavlov will, perhaps not surprisingly, be considered. More surprising will be the finding that the crying of a baby can stimulate the spontaneous production of breast milk. In other words, an important goal of the present course is to arouse amazement.

*Essential reading*

- Gleitman, H. (1995). *Psychology* (fourth edition). New York: W. W. Norton & Company. Chapters 4, 13, and 14.

*Practicals*

**Coordinator:** open.

**Objectives:** In the first practical, the student learns classical conditioning via the computer. By manipulating different variables, the student acquires insight into the different ways in which classical conditioning can occur. In the second practical, the student learns to observe and determine the reliability of his observations. Both healthy children and children with a developmental disturbance (autism) are observed. On the basis of a video recording, the behavior of autistic child is observed and scored using the Psycho-Educational-Profile (PEP) test. The developmental level of the child is then determined, and the students must provide an interpretation of the test results.

The students also report on the practical and develop their scientific writing skills by writing a (short) research article.

#### *Instructional form*

12 tutorial group meetings, 6 lectures, 2 practical meetings.

#### *Examination form*

10 open questions.

### **Course 1.6 Differences between people**

(April 3 - May 12 2000, 6 ects)

Course coordinator: Harm Hospers, Experimental Psychology.

#### *Objectives*

The goal of this course is to acquaint students with psychologically interesting differences between people. In addition, it is attempted to provide an answer to the question of just where these differences may come from.

#### *Further description of the course*

Although people differ with regard to a large number of characteristics (such as values, preferences, outward characteristics, and sex) and these different characteristics all have their own psychological ramifications, we will concentrate in the present course on differences in intelligence and personality. On the basis of increased insight into the nature of these characteristics and their determinants, four major questions will be posed.

- To what extent can human behavior be predicted?
- Just how stable or variable is human behavior?
- What role do genetic and other biological factors play in the emergence of (differences in) behavior?
- What is the influence of the environment: child rearing and culture.

#### *Essential reading*

- Carver, C.S. & Scheier, M.F. (1996). *Perspectives on personality*. Boston, MA: Allyn and Bacon.
- Gleitman, H. (1995). *Psychology* (fourth edition). New York: W. W. Norton & Company. Part 5.

#### *Practical*

Coordinator: Robert Horselenberg, Experimental Psychology.

Objectives: Students are introduced to the administration, processing, and interpretation of questionnaires. Students are also acquainted with a few of the different methods of psychological assessment. The students will administer (parts of) tests/questionnaires and interpret the results. The tests considered in the practical are: the Groninger Intelligence Test (GIT) with practice on three of the nine subtests; the Thematic Apperception Test (TAT) and the Eysenck Personality Profiler (EPP), which the students will

independently administer, score, and then discuss for those traits falling in the most extreme (1<sup>st</sup> or 10<sup>th</sup>) percentiles in a written report. The reliability and validity of the measurements will also be examined. Finally, the students will also become acquainted with the different modalities in which the psychological characteristics of individuals can be examined.

#### *Instructional form*

12 tutorial group meetings, 6 lectures, 4 practical meetings.

#### *Examination form*

10 open questions, also with regard to the practical.

### **Course 1.7 History and Theory**

(May 15 - June 23 2000, 6 ects)

Course coordinator: Rob de Vries, Neurocognition.

#### *Objectives*

Students learn how modern psychology emerged and has developed with regard to content, theories, and institutional practice.

#### *Further description of the course*

Many modern psychological ideas and institutions can be seen as successful solutions to prior problems. Conversely, there are a number of unsolved problems that have occupied psychology from the beginning. The history of both types of problems will be considered in this course although the emphasis will be on the unsolved problems. While the problems have remained unsolved, they are nevertheless the source of inspiration for a large amount of psychological research. Among the topics receiving consideration in this course will be:

- the content, social, and institutional causes of the scientific revolution;
- the emergence of psychology as a consequence of the emergence of the modern natural sciences during the scientific revolution;
- the mind-body problem as a consequence of the scientific revolution;
- the emergence and role of the experiment and laboratory research in the field of psychology;
- continuity between man and animal;
- are animals aware? do chimpanzees have a language capacity?
- the nature and role of human consciousness in human life and the field of psychology;
- what is cognitive psychology?

#### *Essential reading*

- Boon, L. (1982). *Geschiedenis van de psychologie*. Meppel: Boom.
- Various articles.

**Practical**

Coordinator: Rob de Vries, Neurocognition.

**Objectives:** Development of writing skills. Students must write an essay which should pertain to a topic considered in the lectures or the course literature. Students have a tendency, when they write about historical and/or philosophical problems, to be rather vague. The most important aim of the present practical is therefore to teach the student to clearly delimit a problem within the field of psychology.

**Instructional form**

12 tutorial group meetings, 6 lectures, 4 practical meetings.

**Examination form**

Open questions. Practical: an essay of no more than four pages.

**1.2.2 Parallel program (Non-course related)**

The parallel program includes components followed in a separate stream, independent of the course program. Maximum integration of the material and themes from the courses with the non-course related program is certainly attempted. The nature of the material in this parallel stream does not always lend itself to such integration, however. The non-course related program for the first study year includes the following components: Computer skills I, Statistics Ia and Ib, Research methods and techniques Ia and Ib, and Writing skills I.

**Computerskills I**

Coordinator: Jacques Beursegens.

**Objectives**

In the first year of computer instruction, the students acquire a basic knowledge of computer hardware and learn to work with the operating system Windows 95 and a number of the commonly used programs.

**Further description of the program**

A total of five training sessions are provided with each session covering a number of elements.

In the first training session, knowledge of the computer hardware, the operating system Windows 95, and the network is imparted. Grading of the training session is done on the basis of attendance.

In the second training session, students are introduced to the word processing program Word. During this training, the students are given the task of constructing their own sample document. Grading is based on approval of the reconstructed document by the practical leader.

During the third training session, the students learn to work with e-mail and the Internet. Grading is based on attendance.

The fourth training session is provided by the employees at the University Library. The students learn to work with the CD-ROM programs the University Library uses. The students also learn to search the psychological literature using the database PsychLit. Grading is based on attendance.

In the fifth training session, students acquire knowledge of the program Endnote. Grading is based on attendance.

**Literature**

To be announced.

**Instructional form**

The instruction will occur in the so-called computer resource center and the University Library.

**Examination form**

The different training sessions are graded separately.

**Statistics Ia and Ib**

Coordinator: Nick Broers.

**Objectives**

In the first year of study, the student is introduced to psychological research in a variety of forms. On the basis of research results, psychologists accept or reject all kinds of theories. They justify their decisions by referring to the data they collect and typically process with the aid of various statistical methods. In order to estimate the value of the claims of psychologists, a good understanding of statistics is thus indispensable.

**Further description of the program**

The statistical instruction during the basic study year is primarily conceptual in nature and aimed at teaching students to evaluate the significance of their research results. Calculation is less important than insight. The emphasis is on a broad introduction to a variety of topics.

Statistics Ia covers the following components:

- descriptive statistics;
- statistical relations;
- regression analysis;
- elementary probability calculations;
- sample distributions.

Statistics Ib is aimed at:

- testing and estimating;

- a number of common applications, including the t-test and analysis of variance.

In addition, a brief introduction to the most commonly used statistical computer program — SPSS or the Statistical Package for the Social Sciences is provided together with practice on the program. For students who find statistics to be difficult, the computer-aided instructional program, Dr. Stat, is also available.

#### *Literature*

- Moore, D.S. & McCabe, G.P. (1988). Introduction to the practice of statistics. New York: Freeman and Company.
- SPSS manual.

#### *Instructional form*

15 lectures and 30 tutorial group meetings. In addition, practical sessions aimed at the use of SPSS (Windows).

#### *Examination form*

Separate examinations exist for Statistics Ia and Ib. Each examination consists of two sub-tests although the results of the two sub-tests can compensate for each other. The examinations are closed book. Each sub-test consists of 15 multiple choice questions.

### **Research methods and techniques Ia**

Coordinator: Fren Smulders, Experimental Psychology.

#### *Objectives*

In the conduct of psychological research, a number of different methods may be used: experiments, field observations, and questionnaires. In the basic study year, the student will become acquainted with the most important research methods used by psychologists. The methods are primarily introduced to give students a better grasp of the psychological knowledge that they already possess.

#### *Further description of the program*

In the course of the basic study year, the following topics will be considered:

- the experiment;
- problems of control in experimental research;
- correlational research;
- quasi-experimental approaches;
- direct observation studies;
- use of tests and questionnaires;
- archive research;
- interviews.

#### *Literature*

- Goodwin, C.I. (1995) Research in psychology, methods and design. New York Wiley.
- Various articles.

#### *Instructional form*

In a separate course during the first half year, these topics will be studied in connection with six tasks. These tutorial group meetings are also supported by a number of lectures.

#### *Examination form*

Open questions.

### **Research methods and techniques Ib (scientific theory)**

Coordinator: Rob de Vries, Neurocognition.

#### *Objectives*

Scientists construct theories to understand and explain events. Predictions can then be made with the aid of these theories. The possibility of predicting also makes theories suitable for application to actual practice. The questions to be considered here are: What are scientific theories? How does science distinguish itself from non-science? What does scientific progress consist of and are there specific criteria for what constitutes scientific progress? How does the process of scientific reduction occur?

#### *Further description of the program*

The following notions will be considered in particular: scientific induction, falsification, the scientific paradigm of Kuhn; the research program of Lakatos; scientific reduction.

#### *Literature*

- Chalmers, A. (1981). Wat heet wetenschap. Meppel: Boom.
- Various articles.

#### *Instructional form*

5 tutorial group meetings, 5 lectures.

#### *Examination form*

5 open questions.

### **Writing skills I: Searching for references and writing an essay**

Coordinator: Peter Vermeer, Neurocognition.

### Objectives

Good writing skills are indispensable for both psychologists working in research and actual practice. One cannot start writing soon enough during one's study. With this in mind, a number of points at which the students can practice their writing skills are provided throughout the year. Further description of the program

In the first half of the year, two training sessions are planned and, in an extension of these, an assignment. The first training is library training; you want to obtain material on the topic you intend to write about. The library training will familiarize you with how to do this in the library.

The second training is CD-ROM training within the framework of computer-aided instruction. Most of the important journals in the field of psychology are available on CD-ROM. With two of the databases, Psychlit and Medline, you will learn to search the psychological literature. The assignment accompanying the training consists of looking up a number of references using the relevant databases and citing them in APA (American Psychological Association) format. In the second half of the year, an essay will be written on a general psychological topic. A small number of relatively recent publications on the topic of interest will be discussed in the essay. It is the intention that the writing skills that were introduced in the first two training sessions be integrated into the essay. A lecture will also be presented to explain a number of things. In addition, the essays will be discussed. It is the intention that the students not only write the paper but also discuss the papers written by the students within the group. The paper from one fellow student must also be reviewed and reported on orally. That is, a brief summary of the paper (what is the problem? what is the conclusion? and how is the conclusion reached?) must be presented along with a number of questions on the paper.

In addition to the basic textbooks and library journals, a reader may be made available with photocopies of articles and book chapters otherwise not available. Your course instructor will have the reader. Furthermore, reference may frequently

### 1.2.3 Basic textbooks

A number of books are essential for instruction during the basic study year. The books have been selected by the instructors, and it is suggested that you purchase the textbooks yourself. It is possible to receive a discount on the purchase of textbooks, provided you are a member of the faculty's student association "Luna-tic" (see under General: Discount on books). For the basic study year, the following books are required reading.

- Gleitman, H. (1995). *Psychology* (fourth edition). New York: W.W. Norton & Company.
- Hayes, N. (1999). *Principles of comparative psychology*. Hove (UK): Lawrence Erlbaum Associated Ltd, Publishers.
- Carver, C.S. & Scheier, M.F. (1996). *Perspectives on personality*. Boston, MA: Allyn and Bacon.
- Goldstein, E.B. (1998). *Sensation and perception* (fifth edition). Pacific Grove, CA: Bruce/Cole.
- Sternberg, R.J. (1996). *Cognitive psychology*. Fort Worth: Harcourt Brace College Publishers.
- Boon, L. (1982). *Geschiedenis van de psychologie*. Meppel: Boom.
- Goodwin, C. (1995). *Research in psychology, methods and design*. New York: Wiley.
- Chalmers, A. (1984). *Wat heet wetenschap*. Meppel: Boom.
- Moore, D.S. & McCabe, G.P. (1998). *Introduction to the practice of statistics*. New York: Freeman and Company.
- Stephenson, P., Rognes, N., Ritchie, J. & Stephenson, P. (1999). *SPSS Manual for Moore and McCabe's IPS*. New York : Freeman and Company.

For the courses Body and behavior and Development and growth, the relevant literature will be announced at a later date.

In addition to the basic textbooks and library journals, a reader may be made available with photocopies of articles and book chapters otherwise not available. Your course instructor will have the reader. Furthermore, reference may frequently be made to literature available from the student resource center (usually multiple copies). It is important that these sources also be regularly consulted during the course of the basic study year.

### 1.2.4 Formative examinations

Formative examinations are tests intended to provide the taker with feedback on his/her level of knowledge. In contrast to summary examinations, such as the course examinations, decisions with regard to acceptable or unacceptable academic performance or passing versus failure are not made on the basis of the scores obtained on a formative test. The taking of a formative test is intended to be a study guide. By taking a formative test a few times during a course, it is possible for the student to see if he or she has studied sufficiently and whether his or her manner of studying appears to be appropriate. For each question, the student is confronted with certain subject matter and must reflect on the material in order to answer the question. Given that the student receives immediate feedback on every answer, the subject matter becomes better anchored in his or her memory and any misinterpretation is corrected. Given that the tests are done via a computer in one of the computer rooms, the student is also free to complete the tests whenever he or she wants.



## The second study year

### 2.1 GENERAL

The second study year encompasses two distinct periods: the first six courses constitute the first period and involve both a deepening and expansion of the knowledge acquired in the basic study year; the second period provides the student with an opportunity to devote him/herself to his or her own interests and select a possible major.

In the first year, the student was provided with an overview of the different disciplines within the field of psychology: social psychology, developmental psychology, differential psychology, and experimental psychology. Also, the biological, psychological, and cognitive processes that provide the foundations for behavior were considered. In a total of six courses in the second year, a number of broadly related themes will be considered — themes that will mostly make use of the knowledge acquired in the first year. The themes are selected in such a manner that the cognitive and biological-psychological perspectives are always essential.

Course 2.1 is devoted to the question of how human behavior (and the underlying cognitive and biopsychological mechanisms) emerged phylogenetically and just what the evolutionary function of such may be. In course 2.2, the extent to which the knowledge acquired in the first year can be used to explain and possibly help behavioral disturbances and experiences, will be examined. Course 2.3 is devoted to theories of human memory that do not consider memory to have an isolated function. In these theories, all such higher functions as learning, thinking, reasoning, judging, and imagining are integrated. This also holds for the theories derived from artificial intelligence and presented in course 2.5. Before consideration of these theories, however, course 2.4 will be followed. In this course, the structure, function, and evolution of one of the most important means of communication and mental functioning, namely human language, are examined. In course 2.6, human consciousness or the topic of philosophy, cognitive psychology, and biological psychology will be considered. In course 2.7, two different course options are presented to enable the students to gradually orient themselves towards a specific major. Students are not obligated to follow the same direction selected at this time in the third year, however.

The non-course related program consists of two statistical components. Furthermore, the writing instruction provided in the first year is continued with an emphasis on English language skills. This English training is primarily devoted to learning to write and speak in English. Finally, the non-course related program in the second year of study includes further computer skills instruction: a course on programming in Pascal.

### 2.2 OVERVIEW OF SECOND STUDY YEAR

Course	Practical	Additional study
2.1 Evolution and Behavior	Research proposal	Writing skills IIa Computer skills II (Pascal)
2.2 Psychopathology*	Complaint interview	Writing skills IIa Computer skills II (Pascal)
2.3 Memory	Memory practical	Writing skills IIa Computer skills II (Pascal)
2.4 Language	Language research	Statistics IIa Writing skills IIb (English)
2.5 Computing		Statistics IIa Writing skills IIb (English)
2.6 Consciousness	Power point	Statistics IIa Statistics IIb Writing Skills IIb (English)
2.7A Design of Daily Life*	Product evaluation	Statistics IIb Writing skills IIb (English)
2.7B Cerebral asymmetry*	Questionnaire	Statistics IIb Statistics IIb Writing skills IIb (English)

\* These courses are offered in English

#### 2.2.1 Description of the courses

##### Course 2.1 Evolution and behavior (August 23 - September 24 1999, 6 erts )

Course coordinator: Harry Smit, Neurocognition.

##### Objectives

The purpose to this course is to:

- acquire basic knowledge of evolutionary theory;
- acquire basic knowledge of the genetic mechanisms that provide for natural selection;
- learn to think about behavior and psychological functioning in evolutionary terms;
- become familiar with the most important ideas with regard to the evolution of behavior and cognition.

*Further description of the course*

In psychology and the neurosciences, the central question is how behavior and brain functions arise. The question of "why" concerns the function of the behavior: How did a particular behavior, viewed historically, emerge in light of the evolution of the species?

In the lectures, practicals, and case analyses, the following topics will receive consideration:

- the state of the art with regard to Darwin's theory of evolution through natural selection;
- basic principles of population genetics; genetic variability;
- evolutionary explanations for such aspects of social behavior as altruism; game--theoretic explanations such as "tit for tat";
- evolutionary explanations for sexuality and sex differences in behavior and cognition;
- the evolution of the brain and cognition;
- evolutionary explanations for the phenomenon of aging;
- evolution and health;
- improper application of evolutionary explanations.

*Essential reading*

- Buss, D.M. (1999). *Evolutionary psychology: The new science of mind*. Boston: Allyn & Bacon.
- Various articles.

*Practical*

Coordinator: Peter Vermeer, Neurocognition.

Objectives: The practical consists of the writing of a paper in which you show that you can construct and apply a evolutionary-theoretically correct argument. How do you do this? A number of dimensions of behavior can be distinguished. One dimension is part of the living environment and conditions of man. The different dimensions can be distinguished from each other because they are relatively independent. That is, the knowledge and skills pertaining to one dimension do not say much about the knowledge and skills pertaining to a different dimension. The assignment is to select a behavioral phenomenon and categorize the phenomenon under one or more dimensions. You must then provide your arguments for the behavior as such.

*Instructional form*

10 tutorial group meetings, 5 lectures, 1 practical meeting.

*Examination form*

Open questions.

**Course 2.2 Psychopathology**

(September 27 - November 5 1999, 6 ects )

Course coordinator: Anita Jansen, Experimental psychology.

*Objectives*

After completion of this course, the student will be familiar with the most common behavioral disorders: the clinical picture and the diagnostic criteria, the etiological theories and empirical findings that either support or refute the theories, the current manner of treatment, and the effectiveness of the therapies.

*Further description of the course*

The course psychopathology is concerned with disturbed behavior. On the basis of case descriptions, such important clinical pictures as the different anxiety disorders, eating disorders, addictions, mood disorders, psychotic disorders, and psycho-organic disorders are studied.

The questions that will be raised continually during the course are: What is the clinical picture? Where is the boundary between normal and abnormal? What causes such a disorder? And what can be done about the disorder? As will be seen, there is a large gap between theory and practice, between scientific thinking and clinical treatment. A number of different theoretical schools will also be seen to exist, and these schools explain/treat behavioral disorders in keeping with their favorite theory. The choice of theory/treatment in most cases is thus based on ideology and not empirical findings, and the question is whether this situation is so desirable.

*Essential reading*

Various articles.

*Practical*

Coordinator: Geke Blok, Educational development and educational research, tel. 3881121/3881135, Universiteitssingel 50, room 5.127.

Objectives: During the practical, the student becomes familiar with the conduct of an intake interview and establishment of a complaint inventory. Via role playing, interview techniques are practiced and students are given the opportunity to apply the techniques they have learned to simulated patients with different psychological disturbances. Grading is based on the acceptability of a paper.

*Instructional form*

12 tutorial group meetings, 6 lectures, 6 practical meetings of 3 to 4 hours each.

*Examination form*

Open questions.

**Course 2.3 Memory**

(November 8 - December 17 1999, 6 ects )

Course coordinator: Peter Houx, Biological psychology.

*Objectives*

This course is intended to give the student insight into an integral and indispensable part of every information processing system: How does memory work?

Numerous qualitatively different forms of memory are needed to enable the wide range of cognitive functions that we continuously and effortlessly perform. The recollection of an experience from our youth imposes different demands on our cognitive system than finding our bicycle in a bike rack or finding the right word while speaking. In this course, the emphasis is placed on the role of memory in the processing of information. Attention will be equally paid to both cognitive and neurobiological theories of (cognitive) learning and memory. The cognitive processes that play a particularly important role in a normally functioning memory will also be considered: attention, planning, and (re)construction.

#### *Further description of the course*

The course starts with a review of what was learned about memory in the course Human cognition. The standard memory model is contrasted to later insights, with the Working Memory Model of Baddeley receiving particular attention. The extent to which recent theories of brain functioning can lend further insight and plausibility to cognitive models of memory will also be raised. The student will be introduced to a few of the cognitive theories of learning, memory, and forgetting. As will be seen, neurobiological insights sometimes fit quite well with the cognitive theories and sometimes they actually counter the standard models.

#### *Essential reading*

- To be announced.
- Various articles.

#### *Practical*

**Coordinator:** Peter Houx, Biological psychology.

**Objectives:** During the practical, a number of tests stemming from the field of neuropsychology (e.g., the Wechsler Memory Scale) will be studied. The students will first practice the administration of the tests with each other, under the supervision of the practical coordinator. In addition, the students will be familiarized with a number of memory test paradigms, which make use of the computer: the Sperling task and levels of processing. Thereafter, that which has been learned is actually put into practice with at least three people of different ages: young, middle-aged, and old.

The clinical neuropsychological tasks to be used are: 15 word learning test, Digit Span and Digit Span Backwards, Rey Complex Figure Test, bicycle drawing, Paired-associated learning, and questionnaires concerned with meta-memory processes (MIA, CFQ).

The students must process their results and evaluate them in light of the clinical norms supplied to them in a test of clinical reporting.

#### *Instructional form*

12 tutorial group meetings, 6 lectures, 1 practical meeting.

#### *Examination form*

Open questions.

### **Course 2.4 Language** (January 3 - February 11 2000, 6 erts)

Course coordinator: Rob de Vries, Neurocognition.

#### *Objectives*

To acquaint the student with linguistic research into the structure of language, psychological research into the functions (and dysfunctions) of language, and biological research into the evolution of the human language capacity and its position within the cognitive system. To acquaint the student with the particular vision of linguists and psycholinguists on the nature of the cognitive apparatus.

#### *Further description of the course*

The capacity to use language is one of the most important prerequisites for human social and cognitive functioning. Among the topics to be considered:

- the structure of language: the linguistic descriptions of the structure of our linguistic competence; the language acquisition device (LAD); the modular structure of our linguistic capacity (phonological, syntactic, and semantic/conceptual modules); the difference between grammar as etiquette and grammar as a description of our linguistic knowledge system;
- language acquisition: language learning versus parameter setting, the nature-nurture problem;
- language processing;
- language production;
- storage of language in the mental lexicon;
- a damaged and/or deficient linguistic capacity: genetic defects as the cause of a specific language disturbance;
- selective influence of brain damage on the different language modules (aphasia).

#### *Essential reading*

To be announced.

#### *Practical*

**Coordinator:** Leo Blomert, Neurocognition.

**Objectives:** Within a few fractions of a second, people can understand or produce a spoken sentence. In doing this, information on the meaning and structure of words and sentences must be simultaneously processed and integrated. This practical is intended to acquaint you with on-line language processing with the aid of a psycholinguistic research technique, namely: shadowing. By manipulating the semantic and syntactic information in a spoken piece of text together with three other students, you will examine a number of the characteristics of language processing.

#### *Instructional form*

12 tutorial group meetings, 7 lectures, 3 practical meetings.

#### *Examination form*

10 open questions.

**Course 2.5 Computing**  
( February 14 - March 31 2000, 6 ect's )

Course coordinator: Herco Fonteijn, Experimental psychology.

*Objectives*

The purpose of this course is as follows:

- introduction to cognitive science;
- familiarization with the use of computational models in cognitive and biological psychology.

*Further description of the course*

Psychological hypotheses are increasingly specified in the form of computational models. The precision, transparency, and heuristic value of these models, on the one hand, and the availability of sufficient calculation capacity, on the other hand, have contributed to the popularity of these models. Cognitive psychological theories are increasingly leaning on symbolic architectures to characterize human problem solving, reasoning, and knowledge acquisition or on connectionist models to characterize aspects of human learning, categorization, perception, memory, and attention. Within the field of biopsychology, theories are currently developed and tested with the aid of models of the behavior of networks of neurons. In this course, a few of the influential architectures and algorithms will be discussed in connection with the various (bio)psychological phenomena that have given shape to them. Computational models of stereoscopic vision, facial recognition, the conditioning of fear, prosopagnosia, chess, creativity, sadness, learning to walk, and the landing of an airplane will all be considered. In doing this, the student will also become acquainted with such critical undercurrents within cognitive science as situated cognition, artificial life, and dynamic system theory. During the course, the students will also familiarize themselves with the relevant material by conducting a number of practical exercises.

*Essential reading*

- Thagard, P. (1996). *Mind*. Cambridge, MA: MIT Press.
- McLeod, P., Plunkett, K. & Rolls, E.T. (1998). *Introduction to connectionist modeling of cognitive processes*. Oxford: Oxford University Press.  
(One can choose one of the above books.)
- Various articles.

*Practical*

There is no separate practical in connection with this course (see description of the course).

*Instructional form*

12 tutorial group meetings, 6 lectures, audiovisual material, practical exercises.

*Examination form*

Open questions.

**Course 2.6 Consciousness**  
( April 3 - May 12 2000, 6 ect's )

Course coordinator: Rob de Vries, Neurocognition.

*Objectives*

Further acquaintance with the newest cognitive and neuropsychological theories in the area of consciousness. Philosophical reflection on the caveats and problems associated with the notion of consciousness. Consideration of the relevance of consciousness for psychological practice.

*Further description of the course*

Consciousness, conscious experience, and perception were the most important topics of nineteenth-century psychology. With the rise of behaviorism, consciousness disappeared as a topic on the psychological agenda. Only over the past few decades has consciousness reappeared in psychology and neuropsychology, and consciousness is now viewed as one of the most important aspects of mental life. In this course, the material basis for and role of consciousness in mental life will be considered together with the philosophical problems associated with the relation between conscious experiences and the substantive processes that are the carriers of these conscious processes. Important questions and topics are: Is intentionality the hallmark of consciousness? Is consciousness a single entity or do split-brain patients have two separate minds and thus a divided consciousness? Can we access the content of and processes underlying our consciousness via introspection? Are there important forms of mental processing, such as thinking and reasoning, that run unconsciously? What do such dissociation phenomena as blindsight tell us about the unconscious? Such special states of consciousness as dreaming and the different theories of dreaming will also be considered. Libet's research into the neurophysiological correlates of free will and the criticisms of this will be discussed. Furthermore, at the end of the course, the question of whether all this knowledge from psychology and neuroscience has brought us further in our attempts to unravel the brain-consciousness problem or not will be considered. In this connection, the newest views of the philosophers Colin McGinn and David Chalmers will be given consideration.

*Essential reading*

Various articles.

*Practical*

Coordinator: Johanna Ganzinga, Neurocognition.

Objectives: Students will learn to prepare and give a presentation on a topic covered in the course. To do this, the students will also make use of Power Point.

*Instructional form*  
12 tutorial group meetings, 6 lectures, 3 practical meetings.

*Examination form*  
10 open questions. Practical: prepare and give a presentation.

### **Course 2.7 Choice of 2.7a or 2.7b**

**Course 2.7a The design of daily life**  
( May 15 - June 23 2000, 6 ects )

Course coordinator: Remy Rikers, Experimental psychology.

#### *Objectives*

On the basis of a number of applications from cognitive psychology, the student will become acquainted with the topics for a major in cognitive psychology.

#### *Further description of the course*

In contrast to the preceding instruction in cognitive psychology, which primarily addressed isolated components of human cognition, the cognitive system as a whole is examined within this course in connection with the cognitive functioning of people in daily life. With applications in the areas of work, traffic, the law, and education, it is attempted to provide a broad orientation to the subject of cognitive psychology. In particular, attention will be paid to the themes from the alternative majors of cognitive ergonomics and educational psychology.

The goal of cognitive ergonomics is to relate scientifically tested knowledge of the human cognitive architecture to the inconveniences of existence that all of us encounter on a daily basis. Who is not familiar with them? Products that are difficult to operate, packages that are impossible to open, buildings where you cannot find the entrance or exit, and operating instructions that are incomprehensible. These are all inconveniences and impediments that appear to belong to daily life. Everyone encounters them and learns how to live with them. In this course, an introduction to just how cognitive psychology can contribute to greater and better control over daily life will be presented. Educational psychology is concerned with how people change under the influence of instruction and interaction with others. Of first and foremost concern is understanding how children, adolescents, and adults change cognitively and socially as a consequence of schooling. This course is also aimed at, among other things, understanding the nature of the changes over time and as a result of technological developments in education.

#### *Essential reading*

Various articles.

*Practical*  
Coordinator: Remy Rikers, Experimental psychology.  
Objectives: Within the context of a team, students acquire experience with the conduct of a product evaluation project. An already existing appliance is systematically evaluated. The different phases in the project are reported on in the form of a poster presentation.

*Instructional form*  
12 tutorial group meetings, 6 lectures, 2 practical meetings.

#### *Examination form*

Open questions. Report on practical in the form of a poster presentation.

### **Course 2.7b Cerebral asymmetry** ( May 15 - June 23 2000, 6 ects )

Course coordinator: Harald Merckelbach, Experimental psychology.

#### *Objectives*

The purpose of this course is to gain:

- knowledge of the structural differences between the left and right halves of the brain;
- knowledge of the psychological differences between the two halves of the brain;
- knowledge of the implications of these differences for developmental psychology and psychopathology.

#### *Further description of the course*

Not only structural but also functional differences exist between the two halves of the human brain (cerebral asymmetry). An example of such a structural difference is that certain neurotransmitters in one hemisphere show a greater concentration than in the other. An example of such a functional difference is that some emotions are mediated more by one hemisphere than by the other. In this course, an inventory of just such differences will be made. A historical perspective is initially adopted in the course and attention is thereby paid to various clinical neuropsychological case studies, experimental neuropsychology, and psychophysiology. The implications of what is discovered for such disciplines as developmental psychology and psychopathology should be kept in mind at all times. The message in this course is that the left-right differences in the brain are certainly interesting and can provide a handy introduction to biopsychology but also that the significance of the differences is often overestimated.

#### *Essential reading*

- Springer, S.P. & Deutsch, G. (1998). Left brain, right brain: Perspective from cognitive neuroscience (fifth edition). New York: Freeman.

**Practical**

Coordinator: Peter Houx, Biological psychology.

Objectives: Students become acquainted with the relevant questionnaires and tests, which all stem from clinical (neuro)psychology.

- Squeeze task: measures left-right differences in hand squeeze strength.
  - Dichotic listening task: measures ear advantage using a very common paradigm (computer guided).
  - Tapping: Analogue to the Halstead-Reitan Finger Oscillation Test for motor speed.
  - Hand preference questionnaire (Edinburgh).
  - Conjugat Eye Movement Test: relates eye movements to hemispheric activity.
  - Aiming tasks: motor system.
  - Zennhausen preference test: relates cognition and behavior to hemispheric activity.
- A critical review of the literature on one of these tasks will be required in the form of a report and graded as either satisfactory or unsatisfactory.

**Instructional form**

12 tutorial group meetings, 4 lectures, 1 practical meeting.

**Examination form**

Open questions.

**2.2.2 Parallel program (non course related)**

The non-course related program includes: Computer skills II, Statistics IIa and IIb, and Writing skills IIa and IIb (IIb is instruction in English). All of the components (with the exception of English) relate to the instruction in the first year. Statistics is presented parallel to courses 2.4 through 2.7. The Writing skills instruction starts at the beginning of the year and continues throughout the year. As part of the writing instruction, a "presentation" training program is organized in course 2.1. The Computer skills instruction runs parallel to courses 2.1 through 2.3.

**Computer skills II: Pascal**

Coordinator: Robert van Doorn, Experimental psychology.

**Objectives**

The second year of computer skills instruction consists of an introduction to programming. Students learn to think about problems in terms of algorithms and data structures, and they will indeed use the computer to solve these problems.

**Further description of the program**

By learning to program, students will investigate the black box that the computer still is for most people. Such insight is of critical importance for psychologists for a number of reasons. Cognitive psychologists, for example, can fulfill the important function of mediator between designers and end-users and must be able to communicate in the language of the designer. In addition, programming experience clarifies the analogy between man and computer, which has been the driving force behind theory formation in the field of psychology for quite some time now (see course 2.5, which connects up with the Computer skills instruction). In addition to the teaching of practical programming skills, it is attempted to instill a conceptual understanding of programming as well. Finally, the acquisition of such programming skills can also lead to a better understanding of word processors, database software, and other applications that all psychologists confront in daily practice.

**Literature**

- Practical book Pascal.

**Instructional form**

5 lectures, approximately 8 obligatory practical meetings.

**Examination form**

Different task assignments and a final examination with open questions

**Statistics IIa and IIb****Statistics IIa**

Coordinator: Nick Broers, Statistics

**Objectives**

In the second year, the student receives further training on the more complex statistical methods for data processing.

**Further description of the program**

In this part of the statistics training, considerable attention is devoted to such general linear models as regression analysis and analysis variance. Simple and multiple regression analysis, covariance analysis, model building, and the use of dummy variables are all considered. In addition, one-way and multiple analyses of variance are also considered.

**Literature**

- Kleinbaum, D. G., Kupper, L. L., Muller, K. E., & Nizam, A. (1988). Applied regression analysis and other multivariable methods (third edition). Pacific Grove: Duxbury Press.
- SPSS Manual.

*Instructional form*

One lecture per topic, with an accompanying tutorial group meeting, a SPSS practical, and a workshop.

*Examination form*

20 multiple choice questions. One passes when 11 of the questions are answered correctly.

**Statistics IIb**

Coordinator: Gerard van Breukelen, Statistics

*Objectives*

Building on the information presented in Statistics Ia, Ib, and IIa on analysis of variance, the repeated measures analysis of variance for a continuous variable (such as reaction times or test scores) will be considered here. Two repeated measures designs are particularly common. In laboratory experiments, one frequently speaks of a within-subjects design: All of the subjects are observed under all conditions and thus measured repeatedly. In field experiments for the evaluation of a new teaching method or therapy, for example, one frequently speaks of a between-subjects design: Each individual is assigned to a single condition (such as intervention or control); but the dependent variable is repeatedly measured, for example, prior to intervention, after intervention, and one year later.

In this course, both designs will be considered. The objective is to teach students to recognize the designs and to properly analyze and interpret the data gathered in such a manner. The emphasis is on understanding the underlying statistical model and being able to translate the apparently complicated computer output into such familiar methods as paired and unpaired t-tests.

*Further description of the program*

The material covers three designs. The first is the one-way within-subjects design, the analogue of the one-way ANOVA but for cases where the same person is observed under all conditions. The second is the two-way within-subjects design, the within-subjects analogue of the two-way ANOVA. For both designs, two well-known methods of analysis will be practiced, namely the univariate (mixed model) methods and the multivariate (MANOVA) method. The sample distribution requirements underlying the two methods will also be considered. The third design is the split-plot design for field experiments with repeated follow-up measures. This design includes both a between-subjects factor (intervention) and a within-subjects factor (measurement occasion) and also frequently a covariant (prior measurement).

*Literature*

- Lecture handouts.
- Gitzen, E. (1992). ANOVA repeated measures. Newbury Park, CA: Sage.
- SPSS Manual.

*Instructional form*

For each of the designs: a lecture, an tutorial group meeting on the theory and a pen and paper assignment, an SPSS practical, and a seminar in which the SPSS assignments are discussed. (This procedure is thus repeated three times.)

*Examination form*

Multiple choice questions, open book.

**Writing skills IIa and IIb**

Coordinator: Peter Vermeer, Neurocognition.

*Objectives*

The writing instruction in the second year builds on that in the first year. In the second year, two essays are written.

**Writing skills IIa: Presentation and essay**

This course consists of the training of presentation skills and the writing of an essay on a general psychological topic. After completion of the essay, it is presented by the writer to the other members of the group and then discussed within the group. The essays are evaluated in the standard manner.

**Writing skills IIb: English and essay**

This course consists of:

- the development of scientific writing skills in English via the writing of short papers and research summaries;
- the expansion of one's English speaking ability with an emphasis on scientific presentation and discussion in English.

*Objectives*

The objectives with regard to writing pertain to five aspects of scientific writing:

- clarity (readability, clear aim, logical build up of the argumentation, meticulous justification, well-rounded conclusion);
- correct language use (grammar particularly concerned with the structure of sentences, use of tenses, and use of adjectives and adverbs);
- punctuation;
- readability (use of key terms, provision of clear links between different topics, choice of active versus passive forms or impersonal form); and
- techniques for revision and lay-out

The objectives with regard to speaking concern:

- giving a presentation, and
- leading and participating in a discussion.

The emphasis in this course is on writing: instruction in English as speaking is already addressed in courses 2.6 and 2.7.

*Further description of the program*

The intention is that popular scientific subjects be presented and discussed at the level of the non-expert and non-specialist.

The subject matter does not necessarily bear a direct relation to the topics from the relevant parallel course. The objective is to learn to speak, with particular attention to correct formal language use and the relevant vocabulary. In addition, attention is paid to how skillfully the students can answer questions and express themselves so that a better understanding and thereby a good discussion can be facilitated.

The students will be asked to write a number of short pieces during this course. The structure of the course is such that students can use their own written pieces to give a short presentation or lead a discussion within the tutorial group meetings. In addition, there is considerable space for feedback, adjustment, and development. The course is directed at the writing of a second year paper with guidance and feedback. In addition to the writing of this paper, it is also required that the student give a presentation on the basis of the paper.

*Instructional form*

Tutorial group meetings and feedback meetings.

*Examination form*

The paper is evaluated with regard to the content and the English, with both components counting equally. The presentation is also evaluated with regard to the content and the English. Both the paper and the presentation must be judged satisfactory.

**2.2.3 Basic textbooks**

Similar to the first study year, the second study year also has a list of basic textbooks that should be purchased by the students. Provided one is a member of the faculty's student organization "Luna-tic," it is possible to purchase these books at a discount (see General).

- Buss, D.M. (1999). *Evolutionary Psychology: The new science of the mind*. Boston: Allyn & Bacon.
- Thagard, P. (1996). *Mind*. Cambridge, MA: MIT Press.
- McLeod, P., Plunkett, K. & Rolls, E.T. (1998). *Introduction to connectionist modeling of cognitive processes*. Oxford: Oxford University Press.
- Springer, S.P. & Deutsch, G. (1998). *Left brain, right brain. Perspectives from cognitive neuroscience (fifth edition)*. New York: Freeman.
- Kleinbaum, D.G., Kupper, L.L. & Muller, K.E. (1988). *Applied regression analysis and other multivariable methods*. Belmont: Duxbury Press.
- Crocker, L & Algina, J. (1986). *Introduction to classical and modern test theory*. Fort Worth: Harcourt Brace Javonovich College Publishers.

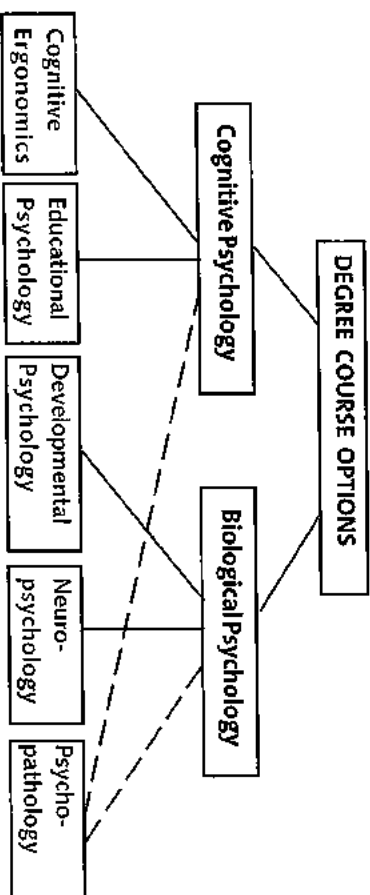
**CHAPTER 3****Overview year 3**



## The third study year

### 3.1 GENERAL

In the third study year, the students choose one of two possible directions for further study: biological or cognitive psychology. Within this direction, the students further specialize by choosing a specific major. The third year is constructed in such a manner that the first three courses (between September and December) consist of the basic courses for the general direction of specialization. The remaining four courses consist of courses from the student's major. In the direction of cognitive psychology, the possible majors are Cognitive ergonomics or Educational psychology. In the direction of biological psychology, the possible majors are Neuropsychology or Developmental psychology. In addition, it is possible for students to follow, after completion of the basic program in either cognitive or biological psychology, part of the program from the mental health program (Geestelijke gezondheidskunde, GGK) within the Faculty of Health Sciences (for a major in Psychopathology).



### 3.2 OVERVIEW OF THIRD STUDY YEAR

Course	Practical	Additional study
<b>Basic courses Cognitive Psychology</b>		
During the whole year: Writing skills III		
3.1.a Reasoning and decision-making	Evaluating/critiquing witness statements	Statistics IIIa
3.2.a Propaganda	Designing a flyer EMG-analysis	Statistics IIIa
3.3.a Multimedia *	Designing a website	Statistics IIIb
<b>Cognitive ergonomics major</b>		
3.4.1 Information design*	Testing effectiveness of information carriers	Statistics IIIb
3.5.1 Man-machine interaction**	Comparison of interfaces evaluate software package	Computer skills III (Delphi)
3.6.1 Traffic and aviation psychology**	Develop workplace, environmental research	Computer skills III (Delphi)
3.7.1 Macro-ergonomics*	Ergonomic case studies	Computer skills III (Delphi)
<b>Educational psychology major</b>		
3.4.2 Cognitive and social development*	Testing social/emotional development construction of a sociogram	Statistics IIIb
3.5.2 Intellectual development*	Analysis of childrens' prior knowledge, task construction, protocol analysis	Computer skills III (Delphi)
3.6.2 Skills training*	Analysis of problem-solving skills evaluation training	Computer skills III (Delphi)
3.7.2 Assessment, testing and evaluation**	Evaluations of career advisors, test development	Computer skills III (Delphi)

Course	Practical	Additional study
<b>Basic courses Biological Psychology</b>		
3.1.b Basic Neuroscience	Neuroanatomy	Statistics IIIa
3.2.b Neurocognition	Analysis and report of ERP and network simulation	Statistics IIIa
3.3.b Perception, imagery & the brain*	Conduct and report of perception experiment and simulation experiment	Statistics IIIb
<b>Neuropsychology major</b>		
3.4.3 Brain damage**	Neuropsychological diagnostics	Statistics IIIb
3.5.3 Behavioral disorders**	Intake and interview skills	Computer skills III (Delphi)
3.6.3 Activation, arousal and psycho-pharmacology**	Psychophysiological measurements	Computer skills III (Delphi)
3.7.3 Neuropsychology of aging**	Learn to perform basic neuroscientific research	Computer skills III (Delphi)
<b>Developmental psychology major</b>		
3.4.4 The baby*	Testing of reflexes and cognitive developmental level	Statistics IIIb
3.5.4 Perception, attention and motor development*	Clinical and neuropsychological evaluation	Computer skills III (Delphi)
3.6.4 Cognition and language*	Administration of intelligence tests, experimental and psychological language research	Computer skills III (Delphi)
3.7.4 Social-emotional development*	Research with psychological measures of emotions	Computer skills III (Delphi)

During the whole year:  
Writing skills III

Course	Practical	Additional study
<b>Psychopathology major</b>		
3.4.5 Mood disorders	Intake interview, complaint inventory, experimental psychopathology	Statistics IIIb
3.5.5 Anxiety	Behavior therapy: diagnosis and functional analysis	Computer skills III (Delphi)
3.6.5 Sexuality	Acquire professional skills	Computer skills III (Delphi)
3.7.5 Psycho-diagnostics	Measurement of personality characteristics; Introduction to test diagnostics	Computer skills III (Delphi)

\* These course are offered in English

\*\* These courses will be offered in English as from 2000/20001.

### 3.3 THE DEGREE COURSE: COGNITIVE PSYCHOLOGY

#### 3.3.1 Basic cognitive psychology program

In a number of courses in the first two years of psychology study, the students were acquainted with cognitive science, in general, and cognitive psychology, in particular. The knowledge acquired with regard to the different key cognitive psychological themes will be further deepened and applied during the third year program for the major direction of cognitive psychology. This initially occurs within the first three courses. Thereafter, the student is expected to choose one of the two possible majors within cognitive psychology: cognitive ergonomics or educational psychology.

The first basic course, Reasoning and decision-making inside and outside the court of law, builds on our knowledge of human decision-making and reasoning. The reliability of the cognitive system and the operation of our memory are a few of the additional cognitive-psychological themes handled within the framework of this course.

The course Propaganda, builds on the already acquired knowledge of perception, emotion, and computational models. Elements from communication science, social cognition, applied linguistics, semiotics, cultural psychology, consumer psychology, and religious psychology create a fitting framework for this course.

In the course Multimedia, the themes of attention, language, and learning are accentuated. Those elements that reach across the different possible majors generally come from systems theory and information technology.

### 3.3.1.1 Overview of the courses

#### Course 3.1a Reasoning and decision - making inside and outside the court of law ( August 23 - September 24 1999, 6 erts )

Course coordinator: Reinout Wiers, Experimental psychology.

##### Objectives

- To gain:
- insight into theories of reasoning, reasoning errors, decisions, and decision-making on the basis of incomplete or "vague" information and the influence of (naive) mental models on reasoning and decision-making;
  - knowledge of important paradigms for psychological research.

##### Further description of the course

In this course, attention is devoted to the themes of reasoning and decision-making with special attention to decision-making on the basis of incomplete, conflicting, or vague information; decisions under conditions of uncertainty, the errors that people — both individuals and groups — can make during this process, and the pros and cons of decision-making support systems. The psychology of law will thus occupy a prominent position in this course. The administration of justice is, after all, a domain where mistaken reasoning and decision-making can have very far-reaching consequences. Finally, the role of psychological expertise in jurisprudence will be considered within this course in part because the legal system is increasingly appealing to such expertise.

##### Essential reading

Various articles.

##### Practical

Coordinator: Eric Rassin, Experimental psychology.

Objectives: To acquaint the student with a number of methods for evaluating the truth of legal testimony. Topics: suggestibility, criteria-based content analysis (CBCA), and lie detection.

##### Instructional form

12 tutorial group meetings, 4 lectures, 3 practical meetings.

##### Examination form

Open questions.

#### Course 3.2a Propaganda

( September 27 - November 5 1999, 6 erts )

Course coordinator: Herco Fontein, Experimental psychology.

##### Objectives

To apply and deepen cognitive-psychological knowledge acquired in the first two years of study against the background of persuasion processes. To also gain the relevant knowledge from such related disciplines as social cognition, semiotics, and communication science.

##### Further description of the course

In this course, the products of individual and mass communication intended to influence the behavior of people will prompt us to study underlying cognitive processes in the heads of the sender and receiver. Among the subjects to be examined: models of mass communication; public relations and attitude change; the psychology of religion and attribution theory; language pragmatics; relevance theory and humor; perceptual psychology and text layout; inferences regarding the meaning of forms and compositions; symbols in semiotics and cognitive science; music and consumer behavior; emotions and esthetics. The emphasis will be on models of the relevant (social) cognitive processes. Thus, students will become acquainted with catastrophic-theoretic models of attitude and group polarization, relevance theory, and neural network models of visual attention and the recognition of musical patterns.

##### Essential reading

Various articles.

##### Practical

Coordinator: Rob Rutter, Experimental Psychology.

Objectives: Application of acquired knowledge in the design of a flyer or poster. Evaluation is based on the design and the accompanying report in which the choices that have been made are theoretically anchored.

Coordinator: Fren Smulders, Experimental psychology.

Objectives: Measurement and processing of EMG for facial muscles and skin responses as indicators of the valence and intensity of affective reactions to emotionally loaded images.

##### Instructional form

12 tutorial group meetings, 5 lectures, practical meetings, audiovisual materials.

##### Examination form

Open questions. The practical meetings are concluded with a report.

#### Course 3.3a Multimedia

( November 8 - December 17 1999 6 erts )

Course coordinator: Robert van Doorn, Experimental psychology.

##### Objectives

- The purpose of this course is to acquire:
- knowledge of cognitive-psychological theories relevant for multimedia information presentation and multimodal information processing;
  - knowledge of multimedia applications in the areas of education and communication;
  - knowledge technological possibilities of multimedia.

#### *Further description of the course*

A recent development in the transfer of knowledge is the appeal to different sensory modalities via different media. In this course, the question of just how a multimedia product should be constructed from a cognitive-psychological viewpoint to exploit the possibilities of and limitations on the cognitive system of the user stands central. Basic psychological knowledge of the possibilities and limitations on the cognitive system in general and attentional processes in particular will be examined in the context of multimodal information processing. In doing this, the emphasis will be on the classic carriers of information requiring multisensory interaction with the user such as a figure with accompanying text. Also, on the basis of the construction-integration theory of Kintsch, students will determine which properties of texts contribute to a better understanding of the content. Thereafter, the technological possibilities for the multimedia presentation of information will be considered. Special attention will be paid to multimedia applications for the transfer of knowledge in the learning situation (for example, hypertext, Internet, and simulations).

#### *Essential reading* Various articles.

#### *Practical*

Coordinator: Robert van Doorn, Experimental psychology.

- Objectives: The practical consists of an introductory course for the program Frontpage '97 (from Microsoft). Thereafter, students will work in small groups on the design, implementation, and presentation of a Website. The following skills stand central:
- working with the program Frontpage '98;
  - application of cognitive-psychological guidelines for the design of a Website and the formulation/revision of an instructional text;
  - presentation of the design.

#### *Instructional form*

12 tutorial group meetings, 4 lectures, 4 practical meetings, and 2 excursions.

#### *Examination form*

Open questions.

### **3.3.2 The cognitive ergonomics major**

Ergonomics attempts to have appliances, technical systems, and tasks designed in such a manner that the safety, health, comfort, and efficient functioning of people is promoted. This description makes clear that ergonomics is practice-oriented; that is, scientifically tested knowledge of human abilities and limitations are translated into practical guidelines and recommendations.

The origin of information is not bound to a single discipline but can come, in principle, from every relevant area of research. The interdisciplinary character of the field of ergonomics means that ergonomists tend to be psychologists, doctors, or engineers. Cognitive ergonomics can be construed as that branch of ergonomics concerned with the attainment of tasks, systems, and appliances to the cognitive system of man. In practice, this attainment is rarely based on (cognitive) theory and thus primarily on common sense tradition. A lack of attunement can lead to not only poor performance but also give rise to clear health and safety risks. The cognitive-ergonomist tries to design "user-friendly" tasks and systems that therefore optimally match the manner in which people perceive, decide, reason, learn, and solve problems. In the first course, information design (course 3.4.1), attention is paid to the cognitive-psychological assumptions behind the design and evaluation of such information carriers as operating instructions, warnings, forms, and pictograms. In the course Man-machine interaction (course 3.5.1), the interactions between

people and machines stand central with a consideration of such matters as navigation, different search methods, and the use of metaphors. The third course, Traffic and aviation psychology (course 3.6.1), is aimed at the physical-ergonomic and anthropometric aspects of the design of workplaces and thus the question of how such individual related variables as fatigue, stress, and vigilance can be taken into consideration. Finally, in the course Macro-ergonomics (course 3.7.1), the attunement of the work environment to the possibilities and limitations of man is considered along with the research methods and techniques typically employed by cognitive ergonomists.

#### **3.3.2.1 Overview of the courses**

**Course 3.4.1 Information design**  
( January 3 - February 11 2000, 7 ectS )

Course coordinator: Jettie Hoonhout, Experimental psychology.

#### *Objectives*

- The purpose of this course is to:
- become acquainted with insights and findings from the area of "information design";
  - acquire insight into the possibilities for applying cognitive-psychological knowledge and theories in the development of products, devices, etc.
  - introduce methods and techniques for the development and evaluation of such information design products as operating instructions, warnings, forms, and displays.

#### *Further description of the course*

Information design is the interdisciplinary field in which cognitive-psychologists, ergonomists, applied linguists, and graphic designers tackle the question of how

they can produce effective graphic communication aids, such as manuals, pictograms, etc. After theoretical consideration of such cognitive-psychological topics as planning, gathering of information, and affordances, a large number of examples will be used to illustrate the possibilities and limitations of using language, text, figures, and symbols as means of communication. Among the examples receiving in-depth consideration are: operating instructions for (complex) devices, warnings, tables and graphs, and pictograms. Attention will also be paid to instructional materials for the elderly. The student also becomes acquainted with the skills needed to evaluate and optimize the effectiveness of the aforementioned types of information carriers.

#### *Practical*

**Coordinator:** Jettie Hoonhout, Experimental psychology.

**Objectives:** Practical experience will be gained with different methods to evaluate the understandability of communication aids. Students will conduct a task analysis, design a product evaluation test, construct an error analysis, and become acquainted with the ecological approach of interface design.

#### *Instructional form*

12 tutorial group meetings, 4 lectures, 5 practical meetings.

#### *Examination form*

Open questions

### **Course 3.5.1 Man-machineinteraction**

(February 14 - March 31 2000, 7 erts )

**Course coordinator:** Robert van Doorn, Experimental psychology.

#### *Objectives*

The purpose of this course is to answer the following questions.

How can the design of machines take the potentials and limitations of human information processing into consideration?

What approaches are available to determine and optimize the usability of systems?

#### *Further description of the course*

Man-machine interaction constitutes an important new multidisciplinary area of work for cognitive psychologists. In this course, you will first be introduced to the most important theoretical and empirical approaches within the field. Of particular interest will be the possibilities and shortcomings of systems in relation to human information processing. The central question is how systems can be optimized to allow the interaction with people to run as naturally, efficiently, and effectively as possible. On the practical side, the methods and techniques for evaluating the usability of a system in a particular context with a specific target group will be examined and applied.

#### *Essential reading*

Various articles.

#### *Practical*

**Coordinator:** Robert van Doorn, Experimental psychology.

**Objectives:** Students will plan, conduct, and report on a self-designed and implemented (in course 3.3a) Website.

#### *Instructional form*

12 tutorial group meetings, lectures, practical meetings.

#### *Examination form*

Open questions. The practical is concluded with a report.

### **Course 3.6.1 Traffic and aviation psychology**

(April 3 - May 12 2000, 7 erts )

**Course coordinator:** Jan Ramaekers, Experimental psychology.

#### *Objectives*

The purpose of this course is to gain:

- knowledge of cognitive psychological theories with applications from traffic psychology, aviation psychology, etc.
- knowledge of models and approaches from cognitive psychology with particular attention to such subject variables as fatigue and stress and such environmental variables as noise.

#### *Further description of the course*

Traffic and aviation psychology devote attention to the relations and interactions between people and their often non-natural environment. The most important theoretical themes considered in this course concern the ecological, energetic, and cognitive psychological models of task performance. Of primary concern are such non-natural environments as workplaces (including cockpits, control rooms, etc.), roads, and cities. Attention is devoted to the effects of fatigue, medication, noise, and temperature on human performance; on safety, risk management, and human errors; on the question of how people find their way in complex environments, and the cognitive aspects that play a role in the design of these non-natural environments. Attention is also paid to human behavior in relation to the natural environment. The themes in this context are, among others, dealing with natural and technological disasters.

#### *Essential reading*

Various articles.

#### *Practical*

**Coordinator:** Annemiek Vermeeren, Experimental psychology.

**Objectives:** Conduct, analyze, and report a comparative study of the effects of environmental noise on task performance.

*Instructional form*

12 tutorial group meetings, 4 lectures, 4 practical meetings.

*Examination form*

Open questions.

**Course 3.7.1 Macro-ergonomics**  
(May 15 - June 23 2000, 7 ects )

Course coordinator: Jettie Hoonhout, Experimental psychology.

*Objectives*

The purpose of this course is to:

- acquaint the student with the content and practical aspects of the multidisciplinary approach that is often needed to gain insight into macro-ergonomic problems and topics;
- gain insight into the contribution that cognitive-psychologists can make to the attainment of the work environment in the broadest sense of the term to the abilities and limitations of man.

*Further description of the course*

Ergonomics has been traditionally aimed at the physical and cognitive-psychological abilities and limitations of the individual and the significance of these abilities and limitations for the development of interfaces, devices and workplaces. Problems in the work situation cannot always be traced back to the physical or cognitive limitations of the individuals, however. Practical experience shows that ergonomic interventions at such a "micro-level" are therefore not always successful.

In order to get a good picture of the functioning of individuals in a work situation and possible problems that may present themselves, social factors and characteristics of the organization should be incorporated into an ergonomic analysis in addition to the more traditional factors. This approach is referred to as "macro-ergonomics" and, within such an approach, the individual-work relationship is examined from a broad perspective and to some extent connected to the field of work and organization psychology.

In this course, the macro-ergonomic approach will be considered; among the topics to be studied will be motivation, system theory, situation awareness, safety, mental load, and stress.

As this course is the last one for a major in cognitive ergonomics, it will also be attempted to narrow the gap between textbook study, on the one hand, and research and practical recommendations, on the other, by presenting a number of cases to the students with the research methods and techniques standing central. Actual practice with the methods and techniques will be of

major importance, which also means that the practical accompanying this course will weigh more than is usual for a course.

*Essential reading*

Various articles.

*Practical*

Coordinator: Jettie Hoonhout, Experimental psychology.

**Objectives:** In an extensive practical, students will become acquainted with cognitive ergonomic practice and the research methods and techniques typically employed. Possible topics: ergonomic workplace analysis, formulation of a proposal for an intervention program or a research project, observational techniques.

*Instructional form*

6 tutorial group meetings, 5 lectures, various practical meetings.

*Examination form*

Open questions. The practical is concluded with a written report.

**3.3.3 The educational psychology major**

Education is an attempt to create an environment that stimulates human development: development of what people know, what they can do, and what they feel. Educational psychology examines these changes with a special emphasis on the effects of instruction on them. The point of view in Maasriicht is strongly constructivist in nature (that is, learning is construed as a process of knowledge construction), aimed at learning in adequate contexts, and emphasizes the social character of learning. All of this is in line with the assumptions that characterize problem-based learning and also, thus, the extensive experiences of psychology students themselves.

The normal cognitive and social development of children and adolescents will be considered in the first course (course 2.4.2). In the second course, Knowledge acquisition (course 3.5.2), the processes that provide the basis for the acquisition of (declarative) knowledge will be examined along with an overview of educational methods. In the third course, Skills training (course 3.6.2), the transfer of (procedural) knowledge or skills will be examined. In the fourth course (course 3.7.2), the evaluation of educational achievement with particular attention to the testing of complex knowledge and skills in realistic settings will be at issue. Within this context, the closely related theme of the role of the psychologist in the examination of the academic aptitude and career preferences of children will also be considered.

**3.3.3.1 Overview of the courses**

**3.4.2 Cognitive and social development**

(January 3 - February 11 2000, 7 ects )

Course coordinator: Reinhout Wiers, Experimental psychology.

*Objectives*

The purpose of this course is to provide an answer to the following questions:  
Which processes constitute the basis for children's cognitive development?  
How does instruction influence this development?

*Further description of the course*

Children between their fourth and eighteenth years spend approximately 15,000 hours in school. In this course, the research concerned with the cognitive and social development in this period and how education can interfere in these from baby to young adult will be followed. For each period, the ongoing theoretical controversies will be examined along with their (possible) implications for education. In this connection, both regular education (e.g., science learning) and special education and education-related developmental problems (e.g., teasing) will be examined.

*Essential reading*  
Various articles.

*Practical*

Coordinator: open.  
Objectives: The present practical has two objectives.  
To test an elementary-school child using the Theory of Mind (TOM) test; calculate the test scores; interpret the results; and report on the child to the teacher.  
To examine the structure of prior knowledge (naive theories) in a problem-based learning context.

*Instructional form*

12 tutorial group meetings, 6 lectures, 3 practical meetings.

*Examination form*

To be announced.

**Course 3.5.2 Intellectual Development**

(February 14 - March 31 2000, 7 erts )

Course coordinator: Henk Schmidt, Experimental psychology.

*Objectives*

The purpose of this course is to answer the following questions.  
- How do people acquire declarative knowledge?  
- What are the characteristics and specific requirements of learning by means of instruction?  
- What are the different forms of instruction? More specifically: What are the characteristics of problem-based learning?

*Further description of the course*

Our knowledge of how people learn was, until recently, based on laboratory experiments in which subjects are asked to process simple materials such as lists of words under strongly controlled conditions. But how does someone gain an understanding of the history of Europe? Or interview techniques? The present course is concerned with these questions. The accent, in doing this, is primarily on the instructional methods that have been developed over the past few years on the basis of our increased knowledge of human cognition. Topics: Learning as the reconstruction of mental models of reality; the origin and maintenance of misconceptions, particularly in the natural sciences; associationist perspectives on learning; intrinsic versus extrinsic motivation; learning from examples and learning to think and to solve problems; transfer of knowledge; the development of expertise in a variety of domains; and educational consulting.

*Essential reading*  
Various articles.

*Practical*

Coordinator: Henk Schmidt, Experimental psychology.  
Objectives: The practical accompanying this course has two parts. In the first part, students learn to construct tasks for a problem-based learning curriculum. In the second part, attention is devoted to thinking out-loud and protocol analyses. The objectives of this second part of the practical are:  
- conduct a study of problem-solving with the aid of the thinking-out-loud method;  
- formulation and elaboration of a coding scheme for a protocol analysis of the verbal protocols that have been collected;  
- writing of a research report;  
- and learning how this research method can be used to analyze the knowledge and skills of people.

*Instructional form*

12 tutorial group meetings, 6 lectures, 6 practical meetings.

*Examination form*

Open questions. The practical is concluded with a written report.

**Course 3.6.2 Skills training**

(April 3 - May 12 2000, 7 erts )

Course coordinator: open.

*Objectives*

The purpose of this course is to answer the following questions.  
- What types of skills are there?  
- How can you analyze skills?  
- How do people acquire skills?  
- How can skills be trained or taught?

*Further description of the course*

There are different types and sizes of skills: motor skills, such as writing, typing, bandaging, or the smashing of a ball. Social skills, such as the bringing of bad news, the chairing of a meeting, or the motivation of personnel. Relatively simple cognitive skills, such as addition or subtraction, telling time, the programming of a video, the writing of a business letter, the planning of a time frame, or the design of a poster for a presentation.

Complex cognitive skills, such as the detection of errors in complex technical systems, the programming of computers, or the guidance of air traffic. Or even higher order skills, such as the general capacity to solve problems. For each of these skills, the learning processes responsible for the qualitative differences between beginners and experts will be examined.

The different methods and techniques for analyzing skills will thus be considered in this course as well. And, of course, the question of just how particular skills can best be trained and taught will be considered in depth: Does practice make perfect?

*Essential reading*

Various articles.

*Practical*

Coordinator: Margje van de Wiel, Experimental Psychology.

Objectives: Among the objectives for this practical are:

- task analysis of a practical medical skill;
- on the basis of the task analysis, determination of the design principles for the training of the relevant skills;
- formulation of an observation scheme and observation of two training meetings;
- evaluation of the training and formulation of recommendations for improvement.

*Instructional form*

12 tutorial group meetings, 5 lectures, 6 practical meetings and an excursion.

*Examination form*

Open questions. The practical is concluded with a written report.

**Course 3.7.2 Assessment, testing and evaluation**  
(May 15 - June 23 2000, 7 ects)

Course coordinator: Gerard van Breukelen, Statistics.

*Objectives*

The objectives of this course are as follows.

Knowledge of and a critical approach to the criteria and methods for the evaluation of course participants. What criteria and methods are there?

To what extent are these evaluation methods scientifically supported, reliable, valid, and manageable?

*Further description of the course*

This course is concerned with evaluation within the educational context, both the evaluation of the course participants and the teaching. The relevant questions are, for example: What is the predictive value of tests and questionnaires for the advising or selection of the tested people with regard to their further education or profession? What is the predictive value of examination results? Are simulations of professional situations more appropriate? How can computerized tests and evaluations contribute to the speed, objectivity, and reliability of evaluations? Should teaching be considered good when the participants are satisfied at the end, when the percentage of the participants passing is high, or when the information that is learned can be applied in the work of the participants?

To what extent do student and teacher place responsibility for (negative and positive) results with themselves? What does the total score from a test or questionnaire say about the relevant individual when the items on the measurement instrument constitute a multidimensional or heterogeneous collection? How can tests and evaluations be normed? Should examination scores be judged using absolute or relative norms? Should test scores simply be connected to age and sex or are other personality characteristics more relevant? How should differences in cultures, milieus, cohorts, or generations be dealt with? How can feedback on the questions being evaluated lead to improvement? How can students learn from their mistakes on multiple-choice questions? What do teachers learn from their scores on the rating scales included in the educational evaluations? What remaining feedback is needed? Which criteria should be followed during evaluation, and who has the right to evaluate? Should society have a say in the evaluation of students and training programs? Is the customer always right? And just who is the customer? On the basis of a number of tasks, the preceding and a number of other questions will be considered. It is possible that a small practical on test administration and scoring may also be added.

*Essential reading*

Various articles.

*Practical*

Coordinator: Henk van Berkel, Educational development and research, and Gerard van Breukelen, Statistics.

Objectives: Among the objectives of the practical are the following:

- students design a series of stations for the evaluation of future career advisors;

- students develop an "authentic test" for this course, including guidelines for evaluation and a reliability study.



*Instructional form*

12 tutorial group meetings, 6 lectures, 6 practical meetings.

*Examination form*

Open questions. Practical is concluded with a written report.

**3.4 THE DEGREE COURSE: BIOLOGICAL PSYCHOLOGY****3.4.1 Basic biological psychology program**

The on-going biological revolution in psychology (comparable to the preceding cognitive revolution) is of overriding importance for the present-day "face" of psychology. Within the field of biological psychology, "man as information processing system" stands central, which means taking biological factors into consideration in the study of the psychological or cognitive functioning of man. The manner in which we perceive, remember, speak, and move is determined by among other factors, the operation of the nervous system and the phases of development. Information is often processed very differently by a computer than by people; similarly, toddlers have different cognitive skills than older children and adults.

Following the three basic biological psychology courses, students choose a major in Neuropsychology or Developmental psychology. A major in neuropsychology is aimed at the study of brain-behavior relations and the application of such information to problems related to health and cognitive functioning. A major in developmental psychology is aimed at the study of changes in biological and cognitive-emotional functioning throughout the lifespan.

**3.4.2 Overview of the courses**

The three basic courses of biological psychology build on the basic knowledge acquired in the first and second years of study and offer a structured program to acquire the basic knowledge needed to major in either neuropsychology or developmental psychology. In the first basic course, Basic neuroscience, the student is immersed in the functional anatomy, physiology, and plasticity of the nervous system. In the second basic course, Neurocognition: theory and methods, the most important research methods within the cognitive sciences and their connections to theory formation will be treated. In the third basic course, Perception, imagery, and brain, an extended demonstration of the multidisciplinary approach to theory construction within the field of biological psychology will be provided.

**Course 3.1b Basic neuroscience**

( August 23 - September 24 2000, 6 erts )

Course coordinator: Wijnand Raaijmakers, Neurocognition.

*Objectives*

Acquire knowledge of and insight into:

- the structure and operation of the nervous system;
- the organization of the most important functional systems that provide the basis for perception, movement, emotion, and motivation;
- neural plasticity and recovery of function.

*Further description of the course*

The course is built up around a few central themes. On the basis of the development of the nervous system, a few general organizational principles will be discussed, including the visual system in particular. A second theme is sensory-motor integration, with the neural organization of the somatosensory and motor system occupying a central position along with the manner in which movements and the planning of behavior arise. A third theme concerns the neurobiology of emotion and motivation. The anatomy of the limbic system constitutes the starting point for the study of the neural organization of such emotions as fear and such motivational systems as reward. The last theme concerns the relation between the plasticity of the nervous system and recovery of function.

*Essential reading*

Various articles and chapters from different books.

*Practical*

Coordinator: Wijnand Raaijmakers, Neurocognition, and Jan de Vente,

Department of Psychiatry.

Objectives: The most important objectives in this practical are becoming familiar with neuroanatomical terminology and gaining insight into the spatial and functional organization of the brain. The practical meetings are very well-suited for this: the preparation of structures in sheep brains; the study of brain patterns under the microscope, and a demonstration with human brain material. Assignments to be performed with the aid of brain models, CD-ROM programs, and textbook information will also be given.

*Instructional form*

10 tutorial group meetings, 8 lectures, 5 practical meetings.

*Examination form*

The course test consists of open questions. The practical is concluded with a report evaluated along a ten-point scale; this evaluation also counts towards the final evaluation for the course.

### Course 3.2b Neurocognition: theory and method (September 27 - November 5 2000, 6 erts )

Course coordinator: Leo Blomert, Neurocognition.

#### Objectives

- The purpose of this course is to introduce:
- the theoretical approaches within the cognitive neurosciences;
  - the methods and techniques within the cognitive neurosciences.

#### Further description of the course

The goal of the cognitive neurosciences is to gain insight into the manner in which our brain enables cognitive functioning. This relatively new area of science is per definition interdisciplinary and makes use of concepts and methods from the cognitive sciences, neurosciences, cognitive neuropsychology, and computer sciences. None of the approaches has primacy, and each contributes to a dynamic interaction between diverse knowledge sources.

The cognitive neurosciences provide a bridge between the functional and neural architecture of human cognition. This has been made possible by breakthroughs in neuroscientific research but also predominantly through the development of imaging techniques for the study of brain activity in connection with cognitive processes in both healthy and brain-damaged subjects. Various electrophysiological, metabolic, and electromagnetic methods have become essential for the testing and refinement of our theoretical models of cognitive functioning. Functional neuro-imaging techniques constitute an important supplement (and correction) to lesion research and have developed themselves into an indispensable tool for theory formation and testing. Equal attention will be paid within the present course to the merits and fundamental methodological and conceptual problems associated with these methods.

In addition to the experimental approach, the development of computational models has also made an important contribution to the cognitive neurosciences. PDP and connectionist models are used to develop and test hypotheses regarding information processing in populations of neurons, normal cognitive systems, and brain-damaged cognitive systems. The dynamic interaction between theory and method development will also be critically evaluated in light of research on the themes of working memory, language, and motor behavior.

#### Essential reading

- Ruggs, M. (Ed.), (1997), *Cognitive neuroscience*. Sussex: Psychology Press (paperback).
- Various articles.

#### Practical

Coordinators: Hans Stauder, Neurocognition, and Bernadette Shmitt, Neurocognition.

Objectives: Participation in, analysis of, and reporting on: 1) a topographic ERP experiment and 2) a network simulation of a population of neurons.

#### Instructional form

12 tutorial group meetings, 6 lectures, 2 practical meetings.

#### Examination form

Open questions

### Course 3.3b Perception, imagery, and the brain (November 8 - December 17 2000, 6 erts )

Course coordinator: Leo Blomert, Neurocognition.

#### Objectives

- To acquire knowledge of:
- theories of higher-order perception and mental imagery;
  - the neurobiological organization of perceptual and imagery processes.

#### Further description of the course

Imagine that someone asks you to describe your bicycle or your bicycle crashing into a wall at full speed. It is not at all difficult to answer both questions in considerable detail. You are obviously capable of generating mental representations of both existent and nonexistent matters and also capable of both inspecting and manipulating these representations as if they were actually present. These images are among the essential ingredients of cognitive processes and, as the manifestation of non-verbal thinking processes, play a central role in neurocognitive research.

In this course, you will first be acquainted with the assumptions and concepts that lie at the foundation of current theories of cognitive representation and organization. Thereafter, a model of higher-order visual perception will be developed step by step. Visual mental images are assumed in current theory to be part of the ingredients for normal perceptual processing. The attention paid to visual processes is complemented by the introduction of such key concepts as auditory perception and imagery. The starting point for the proposed explanatory model is the intrinsic relation between cognitive skills, cognitive processes, and the brain. Every new component of a theory will be introduced and supported with experimental research results. Given that perception and mental imagery are, in the end, a consequence of neural activity, the brain circuits that enable these functions will also be examined on the basis of various neuropsychological and functional brain activation (neuro-imaging) studies. Conversely, the (re)interpretation of neuropsychological findings in light of the models of perception and imagery being developed will be seen to provide surprising new insights into otherwise familiar clinical symptoms and syndromes.

- Essential reading**  
 - Kosslyn, S.M. (1996). *Image and brain*. Cambridge, MA: MIT Press (paperback).  
 - Various articles.

**Practical**

**Coordinators:** Holger Mitterer, Neurocognition, and Eric Postma, Computer science, tel. 3883493, St. Jacobsstraat 6, rm. 1.002.

**Objectives:** The conduct of: 1) a visual perception and imagery experiment, 2) a simulation experiment, and 3) the writing of a report on both of these experiments.

**Instructional form**

12 tutorial group meetings, 6 lectures, 2 practical meetings.

**Examination form**

Open questions.

**3.4.3 The neuropsychology major**

The major in neuropsychology is for people who are interested in the connection between body and behavior (i.e., the brain and behavior). Most neuropsychologists work in the area of evaluating the functional disturbances in patients with brain injury or patients with some other behavioral disorder and thus as so-called test psychologists. Neuropsychologists may also be involved in rehabilitation or the training of cognitive skills and in research (for example, within the pharmaceutical industry or university research laboratories).

The main theme of the major in Neuropsychology is psychological functioning and the biological aspects of it. In the first course, Brain injury, the most important functional disturbances resulting from brain injury will be considered. In the second course on Behavioral disorders, disorders in perception and behavior will be examined along with the relevant psychotherapeutic and pharmacological interventions. In the third course, Activation, arousal, and psychopharmacology, the relation between alertness and cognitive performance, on the one hand, and the relevant physiological and pharmacological brain processes, on the other hand, will be addressed in particular. Finally, in the fourth course, Neuropsychology of aging, the cognitive and emotional changes that occur during normal aging will be considered along with the neuropsychological functional disorders that accompany different forms of pathological aging.

**3.4.4 Overview of the courses**

**Course 3.4.3 Brain damage**

(January 3 - February 11 2000, 7 etcs )

Course coordinator: Martin van Boxtel, Psychiatry and Neuropsychology.

**Objectives**  
 This course aims to provide the student with knowledge of brain-behavior relations by examining the disturbances in psychological functioning that occur in connection with brain injury. The goal in the end is that the student gain insight into the taxonomy of the most important neuropsychological syndromes.

**Further description of the course**

Much of our knowledge of cognitive and affective functioning and behavior has been gained through analyses of changes following brain injury. In the present course, the functional disturbances that occur following focal damages in the different parts of the cerebral cortex, connective tissues, and in the limbic and other subcortical brain parts will be examined. The emphasis is on gaining insight into mechanisms. The course starts with a discussion of the general effects of brain injury and the different causes of brain injury. Thereafter, the general and specific dysfunctions with regard to psychological functioning are discussed in connection with injury at the level of the brain stem, diencephalon, and ascending fiber system. Dysfunctions after injury in the posterior neocortex are examined next in relation to perception, spatial orientation, and language. Dysfunctions after injury in the anterior neocortex are discussed in connection to changes in the planning and steering functions. Memory disturbances and affective functions are considered in relation to injuries to the limbic system. Upon completion of this course, the student will have an overview of the functional brain anatomy, brain physiology, and the specific relation between brain structure and psychological functioning. The student is also then familiar with the mechanisms that provide the basis for brain plasticity and regeneration and with the key principles underlying functional recovery after brain injury.

**Essential reading**

- Kolb, B. & Whishaw, I.Q. (1995). *Fundamentals of human neuropsychology*. New York: W.H. Freeman and company.

- Various articles.

**Practical**

**Coordinators:** Martin van Boxtel, Psychiatry and Neuropsychology,

**Objectives:** The practical on neuropsychological diagnosis is aimed at obtaining the skills needed to conduct and report a neuropsychological examination for screening purposes. The practical involves four half days in which the student practices the conduct of neuropsychological test research and immerses him/herself in the different methods for screening and deeper neuropsychological diagnosis. In the practical, the accent lies on the interview with the patient, the interpretation of test results, and the writing of a neuropsychological report on the basis of examination, interview, and observational information. Among the diagnostic methods to be considered are: the Groninger Intelligence Test (GIT), the 15-word learning task, the Complex figure from Rey, the Stroop color-word test, and the Concept Shifting Test.

*Instructional form*  
12 tutorial group meetings, 6 lectures, 4 practical meetings.

*Examination form*  
Open questions.

**Course 3.5.3 Behavioral disorders**  
( February 14 - March 31 2000, 7 ectss )

Course coordinator: Harald Merkelbach, Experimental psychology.

*Objectives*

This course is intended to impart knowledge about the cognitive dysfunctions that accompany severe neuropsychiatric and neurological disorders and to provide insight into the biological mechanisms and intervention possibilities for these disorders

*Further description of the course*

The course is concerned with the changes in psychological functioning that occur

in connection with a number of frequently occurring brain disorders.

The intention is to gain insight into the characteristic manifestations of behavioral problems and cognitive functional disturbances along with the brain and behavioral mechanisms that lie at the foundation of these. The emphasis in this course is on the problems associated with such neuropsychiatric phenomena as schizophrenia, compulsive symptoms, epilepsy, and mood disorders. The neuropsychiatric problems associated with a number of the neurological phenomena important for psychologists will also be considered. Attention will be paid to the psychological problems associated with cerebrovascular disturbances and light brain trauma. With respect to the mechanisms that lie at the basis of behavioral and cognitive disorders, both the relevant biological and psychological factors will be considered.

*Essential reading*

Various articles and chapters from different books.

*Practical*

Coordinator: Geke Blok, Educational development and educational research  
Objectives: The practical attempts to provide students with the skills needed to conduct an intake interview in cases of neuropsychiatric disorders. Both the general interview (problem inventory, history, psychosocial factors) and the special neuropsychological anamnesis will be practiced. Use will be made of simulation patients. The practical is concluded with a report, which will be graded on a satisfactory/unsatisfactory basis.

*Instructional form*

12 tutorial group meetings, 6 lectures, 3 practical meetings.

*Examination form*

Open questions.

**Course 3.6.3 Activation, arousal, and psychopharmacology**  
( April 3 - May 2000, 7 ectss )

Course coordinator: Wilm Riedel, Psychiatry and Neuropsychology

*Objectives*

The purpose of this course is twofold:

- to deepen one's knowledge of the relation between the degree of vigilance or alertness and cognitive achievements and also the neurophysiological and neuropharmacological processes in the central nervous system involved in the regulation of vigilance and alertness;
- to gain knowledge of the relation between disturbances in the regulation of vigilance (as a result of, for example, working nights or the use of psychopharmaceuticals) and accidents (human factors).

*Further description of the course*

Numerous notions are available in the psychological literature to describe the human vigilance function: activation, arousal, effort, inhibition, vigilance, alertness, sustained attention and selective attention. Intensity of attention refers to the so-called energetic processes needed for the processing of information. At the behavioral level, these energy processes can be divided according to their position in the information-processing chain. With arousal, stimulus-related alertness is meant; with activation, response readiness is meant. Effort is the connecting link and refers to conscious attention. In addition to this, there is also an inhibitory system. At the pharmacological level, these processes are predominantly steered by noradrenaline, dopamine, acetylcholine, and serotonin, respectively. At the neurophysiological level, the circuits for all these systems begin low in the brain and project diffusely through the cortex. In this course, considerable attention is paid to how the psychopharmaceuticals with a working mechanism in one of the aforementioned neurotransmitters influence human behavior. On the one hand, the use of psychopharmaceuticals to study behavior and cognitive processes and, on the other hand, the use of psychopharmaceuticals to gain insight into the (side) effects of psychoactive substances will be of interest. In addition, attention will be paid to the neurophysiological regulation of vigilance and how this is associated with the regulation of such autonomous processes as heartbeat and breathing. This relation provides us with psychophysiological measures to examine human vigilance or alertness in such actual practice situations as traffic.

*Essential reading*

- Various articles.

Chapter from the following books (learning resource center):

- Sanders, A.F. (1997). Elements of human performance. New Jersey: Lawrence Erlbaum Associates.

- Eling, P. & Brouwer, W. (1995). *Aandachtsstoornissen: Een neuropsychologisch handboek*. Lisse: Swets & Zeitlinger.
- Gazzinga, M. (1995). *The cognitive neurosciences*. Cambridge, MA: MIT Press.

#### *Practical*

Coordinator: Eric Vuurman, Psychiatry and Neuropsychology, tel. 3886147, P. Debyealaan 25, lab B1.

Objectives: To acquire experience with the experimental influence of arousal via task variables and/or pharmaceuticals; the conduct of psychophysiological measurements used to indicate arousal and activation; and subjective indicators of activation and arousal.

#### *Instructional form*

12 tutorial group meetings, 6 lectures, 4 practical meeting

#### *Examination form*

Open questions.

### **Course 3.7.3 Neuropsychology of aging**

( May 15 - June 23 2000, 7 acts )

Course coordinator: Peter Houx, Biological psychology.

#### *Objectives*

This course is intended to provide the student with knowledge of the cognitive, emotional, and behavioral changes that occur during normal aging. Knowledge will also be acquired of the neuropsychological functional disorders that can occur as a result of pathological forms of aging and the biological and psychosocial mechanisms that lie at the basis.

#### *Further description of the course*

Many of the elderly complain about their cognitive functioning, and a decline in many cognitive processes with the dimming of the years can also be objectively demonstrated. Starting in the fourth decade, a clear slowing down can already be detected. Considerable differences nevertheless exist in the degree of decline in cognitive functioning and skills across people. Some people become "successfully" old; others encounter functional disorders that can considerably hinder daily life. Severe changes can also occur, such as those accompanying pathological forms of senility. The different forms of dementia and different neuro-psychiatric syndromes are also an example of this. The present course will provide an overview of which psychological "modules" deteriorate as part of the normal aging process from the age of 25 on and what happens during pathological forms of cognitive aging. Important questions will thus be: just when do changes occur and just how rapidly? The emphasis will be on neuropsychology and cognitive gerontology along with the connections between the biological, psychological, and social factors during the process of aging. The relative contribution of the aforementioned factors changes with the phase of life. Physiological theories of aging will be considered (such as genetics, free radicals

theory, and the brain reserve theory). Neuropsychological disorders will be studied in relation to neuropsychiatric and neurological syndromes. Dementia and Alzheimer's in particular, Parkinson's disease, age-related cognitive disturbances, anxiety, and depression among the elderly will all be considered. Both diagnostics and classification as well as the biological and psychological forms of treatment/care will be discussed in this connection. Various cognitive theories will also be considered: Is it predominantly declining speed that is responsible for the objective and subjective deterioration, or is it actual deterioration of the senses? What measurable cognitive dysfunction precedes a memory problem or complaint? Various social and cultural influences in addition to the role of health problems will also be discussed.

#### *Essential reading*

- Articles from the Handbook of neuropsychology .
- Various other articles.

#### *Practical*

Coordinators: Sven Slapert, Experimental psychology, and Anneriek Vermeeren, Biological psychology.

Objectives: The Maastricht Aging Study (MAAS) is intended to, among other things, establish norms for a number of clinical (neuro)psychological tests and tasks. The tasks are administered in a standard manner to well-documented and stratified panels of normal subjects between the ages of 25 and 85 years. Pairs of students are presented a data set with one or more of the tasks. Every pair receives a different data set and question. The statistical analyses are performed independently under the supervision of the practical coordinators (effects of age, sex, educational background, and health status). Norm tables are created. And critical discussion in light of the relevant literature provides the basis for a report.

#### *Instructional form*

12 tutorial group meetings, 6 lectures, 4 practical meetings.

#### *Examination form*

Open questions.

### **3.4.5 The developmental psychology major**

A major in developmental psychology is relevant for students who are interested in working with, psychologically evaluating, and treating children, adolescents, and the elderly. A significant percentage of the developmental psychologists are concerned with the possible causes and consequences of behavioral changes during the life course. Within this context, one may think of determining the level of development and making a prognosis for later potential consequences. These developmental psychologists work primarily in the areas of education, educational advising, public relations, and in policy functions. When the emphasis lies more on disturbed development, then the developmental psychologists work primarily in the areas of health care.

mental health care, care for the mentally handicapped, etc. In addition to these options, developmental psychologists may also be involved in university and/or industrial research.

The developmental psychology program at Maastricht University is concerned more than the developmental programs elsewhere with the connections between the biological and psychosocial aspects of behavior. In the first course, The baby, the relations between biological and psychological factors during early development will be discussed along with the influence of these factors on later development. In the second course, Perception, attention, and motor development, normal and pathological changes in perception, attention, and the motor system throughout the course of life will be considered. In the third course, Development of cognition and language, both the normal and disturbed courses of development for the cognitive capacity and language will be considered. In the final course, Social-emotional development, precisely such development will be considered. In all of the courses, attention will be paid to not only the biological mechanisms and theories of development but also to the evaluation, research, and treatment of developmental disorders.

### 3.4.6 Overview of the courses

#### Course 3.4.4 The baby

( January 4 - February 11 2000, 7 acts )

Course coordinator: Hans Stauder, Neurocognition.

#### Objectives

This course is intended to provide insight into the current state of the art with respect to the biological and behavioral processes that influence early human development. At the same time, the influence of the early course of development on later development will be examined.

#### Further description of the course

Early development is the most dynamic period of human ontogenesis. Given the special characteristics of research into early human development, this course has a format that deviates from that of the other courses within the developmental psychology major. In contrast to the other courses with their life-span orientation, the theme of the present course is the very earliest developmental phase. This does not, however, mean that the relation between early and later development will not be an issue. As will be seen, apparently insignificant endogenous (genetic) factors and/or environmental factors can considerably influence the further development of an individual. Early development is nevertheless characterized by a very large degree of plasticity with regard to both physiology and behavior. The removal of a complete brain hemisphere during the early phases of development, for example, need not lead to later disturbed development.

Among the topics to be considered are: brain-behavior relations during early development, inborn reflexes that later disappear, effects of drug use by the mother on the baby, the question of what infants perceive and know, leaps/discontinuity in early development, and the boundaries between normal and abnormal early development. In addition to the basic textbook, a number of recent articles will also be required reading.

#### Essential reading

- Bremner, J.G. (1994). *Infancy*. Oxford, UK: Blackwell.
- Various (recent) articles.

#### Practical

Coordinator: Hans Stauder, Neurocognition.

Objectives: To acquire experience with the evaluation of infant reflexes and determination of the cognitive developmental level of babies and young children with the aid of Bayley's developmental scales.

#### Instructional form

12 tutorial group meetings, 4 lectures, 2 practical meetings.

#### Examination form

Open questions.

#### Course 3.5.4 Perception, attention, and motor development

( February 14 - March 31 2000 7 acts )

Course coordinator: Lisa Jonkman, Neurocognition.

#### Objectives

This course is intended to provide an overview of the human development of perception, attention, and motor functions from early to old age. The emphasis is on normal development. The most important disturbances of perceptual, attentional, and motor functions will be examined in relation to the normal course of development.

#### Further description of the course

Although perception, attention, and motor development change most spectacularly during the baby years, these functions are subject to change throughout the life span. In considering the relevant theories within the present course, the emphasis will be on the biological and physiological models of development. As will be seen, a disturbance in one or more of these functions can have very different consequences, depending on the age at which the disturbance occurs. Being born deaf is very different, for example, than becoming deaf at a later age. During this course, it will be quickly seen that developmental theories of perception and the motor system are inseparable from attention and the development of attention.

The most important disorders related to perception, attention, and the motor system will be considered and placed within a developmental perspective. As will be seen, the examination of disturbances from a developmental perspective can provide some surprising insights. Hypotheses have been developed, for example, with regard to brain activation and perceptual disturbances that appear to constitute the basis for the development of autism. Such topics as the development of "bottom-up" versus "top-down" attentional processes, the development of inhibition and the frontal cortex, the development of motor functions, ADHD and Parkinson's disease, and the development of smell, taste, auditory, and visual perception will also be considered.

*Essential reading*  
To be announced.

#### *Practical*

**Coordinators:** Lisa Jonkman, Neurocognition, and Hanneke van Mier, Neurocognition.

**Objectives:** To acquire experience with the clinical and neuropsychological evaluation of executive functions in children and adults. In the practical, particular attention will be paid to the different experimental and psychophysiological research designs used to evaluate these functions.

#### *Instructional form*

12 tutorial group meetings, 4 lectures, 2 practical meetings.

#### *Examination form*

Open questions

### **Course 3.6.4 Cognition and language development** (April 3 - May 12 2000, 7 ects )

**Course coordinator:** vacancy, Neurocognition.

#### *Objectives*

To obtain insight into the development of cognition and language throughout the life course with an emphasis on the underlying biological mechanisms. Disturbances of cognition and language development will be considered in relation to the normal course of development.

#### *Further description of the course*

Cognition and language have in common that they both develop for the most part after birth and are therefore strongly influenced by cultural factors and the environment. Cognition and the development of language also show a special relation during particular developmental periods.

A strong correlation exists around 2-3 years between the development of language and important changes in the memory and thinking of children, for

example, intelligence is a central notion in the study of cognition, and many (developmental) psychologists are confronted with the notion in actual practice. In the present course the following questions will be considered with regard to intelligence: the theory and development of hypothetical-deductive thinking and the cultural aspects of intelligence; changes in the predictive value of IQ during development; and the relation between intelligence and the brain. In addition, attention will be paid within the present course to the extremes along the intelligence distribution: When is someone highly gifted, and how does this manifest itself at an early age? What forms of mental handicap can be distinguished, and how do these manifest themselves at an early age? While the basic cognitive and linguistic functions develop during infancy, they only manifest themselves in more or less adult form towards the end of childhood. The result of this delayed development is cognitive and communicative capacities without an equal. During development, one can speak of not only an increase in general processing speed but also qualitative information-processing changes that appear in some cases to occur in a stepwise manner. During normal aging, one can also speak of a decrease in processing speed but it is not yet clear whether qualitative changes also occur. In our consideration of the many theories of cognitive and linguistic development, the emphasis will be on those models with biological or physiological implications.

#### *Essential reading*

- Various scientific articles.
- Chapters from different books.

#### *Practical*

**Coordinators:** vacancy, and Bernadette Schmitt, Neurocognition.

**Objectives:** To acquire practical experience with the selection, administration, and evaluation of intelligence tests for different age groups. Use will be made of the following tests: Raven's Progressive Matrices, SON-R 2, 5-7, PEP, and the WISC-R. In a second practical, attention will be paid to experimental and psychophysiological language research.

#### *Instructional form*

12 tutorial group meetings, 4 lectures, 2 practical meetings.

#### *Examination form*

Open questions.

### **Course 3.7.4 Social-emotional development** (May 15 - June 23 2000, 7 ects )

**Course coordinator:** Harry Smit, Neurocognition.

**Objectives**

This course is intended to provide a picture of social and emotional development from infancy to old age. The emphasis is on biological development theories with regard to the effects of disturbed early development on later social-emotional development.

**Further description of the course**

Despite the fact that most people recognize the importance of social-emotional development, it is nevertheless not easy to operationalize and/or measure the social and emotional aspects of development. There are no standard intelligence tests that measure social-emotional intelligence, for example. In contrast, the literature contains descriptions of very divergent forms of social-emotional development. In the present course, the following themes will be considered: the relation between the brain and the development of consciousness, the development of friendship relations, moral development, and the development of so-called complex emotions. In addition to the description of possible relations between social-emotional and cognitive development, disturbances in the area of social-emotional development will also be specifically examined. The emphasis in doing this will lie primarily on the underlying biological mechanisms and processes.

**Essential reading**

To be announced.

**Practical**

Coordinator: Harry Smit, Neurocognition.

Objectives: In this practical, the students will:

- 1) test a child using the Theory of Mind (TOM) test;
- 2) to be announced.

**Instructional form**

12 tutorial group meetings, 4 lectures, 2 practical meetings

**Examination form**

Open questions.

**3.5 THE DEGREE COURSE: PSYCHOPATHOLOGY****3.5.1 Basic psychopathology program**

In the design of this specialization, not much attention was initially paid to the field of mental health although the profile of such a direction of study is highly relevant to innumerable functions within this field of application. The students were interested in the field of mental health and later appeared to want greater clarity on the different possibilities that Maastricht has to offer within this

area. In addition to a major in Neuropsychology, where mental health plays an important role, students can also develop their own path of study. One possibility is to follow courses within the mental health section of the Faculty of Health Sciences.

Psychology students who follow the psychopathology direction of study meet all of the initial requirements for a clinical psychology major at the other universities in the Netherlands. A graduate who has followed this psychopathology program is thus qualified for all follow-up programs (like post graduate studies) in the field of psychopathology.

Six courses from the mental health program together with their associated practicals and skills training are of particular relevance for psychologists: Mood disorders, Anxiety, Sexuality, Psychodiagnostics, Illusions and delusions, and Psychosomatics. Only with these six courses as part of their study are psychology students qualified to enter the relevant post graduate programs. Those students majoring in psychopathology are also required to follow the courses Mood disorders, Anxiety, Sexuality, and Psychodiagnostics; they are free to follow the courses Illusions and delusions and Psychosomatics or some other choice in their fourth year.

**3.5.2 Overview of courses****Course 3.4.5 Mood disorders**

Coordinator: Vacancy

**Objectives:**

This course is concerned with mood disorders (depression, mania). The theme is approached from different perspectives (social, cognitive, pharmacological, etc.).

The following topics will be considered in particular: normal and abnormal mood fluctuations; epidemiology; diagnostics; biological, psychological, and social explanatory models; and treatment options.

The relevant disciplines are: clinical psychology, (psycho)pharmacology, social and biological psychiatry, cognitive psychology.

**Practicals and skills**

Training: Anamnesis I

Coordinator: Annet Hofman, Medical, clinical and experimental psychology.

Study load of 32 hours.

Anamnesis or an intake interview is a conversation with a very specific purpose: to gather that information needed to make a diagnosis. In this training, the different phases in the intake interview for mental health problems will be considered. In addition, the question of how one establishes a diagnosis on the grounds of the interview and observational information will be addressed. The skills are evaluated via simulation contacts.



**Practical:** Experimental Psychopathology I

**Coordinator:** Vacancy.

Study load of 12 hours.

This short practical consists of an experiment that the students conduct themselves. The experiment concerns the influence of mood on performance.

*Lectures and examination form*

The practical training is supported by approximately six lectures.

The examination consists of open questions and the writing of a report on the practical.

### **Course 3.5.5 Anxiety**

**Coordinator:** Merel Kindt, Differential and Experimental Psychology

*Objectives and thematic content*

To acquire knowledge of the origins, manifestations, natural course, and therapy for (pathological) anxiety.

The following themes will be considered: Nosology and prevalence/incidence of the most common anxiety disorders; experimental models of anxiety; cognitive behavior therapy; psychopharmacology.

*Practicals and skills*

**Training:** The behavioral-therapeutic process.

**Coordinators:** Annet Hofman, Medical, Clinical and Experimental Psychology

Study load of 32 hours.

In this training, the different analytic schemes that are part of the diagnosis on a learning-theoretic basis (e.g., the conduct of a functional analysis) will be considered. Within the framework of this training, a workshop will also be conducted to consider the different behavioral-therapeutic principles. The training consists of five meetings of three hours each, a workshop of six hours, a simulation contact, and a follow-up discussion of the simulation contact.

*Lectures and examination form*

The training is supported by approximately eight lectures

### **Course 3.6.5 Sexuality**

**Course coordinator:** Vacancy.

*Objectives*

The purpose of this course is to gain:

- knowledge of the biological basis for both normal and deviant sexualbehavior;
- knowledge of the psychological basis for both normal and deviant sexual behavior;
- knowledge of the relational context for both normal and deviant sexual behavior;

- knowledge of social context for both normal and deviant sexual behavior, including the law;

- knowledge of the diagnostic criteria for sexual disorders;

- knowledge of preventive strategies with respect to sexuality;

- knowledge of research methods in the area of sexuality;

- insight into one's own attitudes with regard to sexuality.

*Further description of the course*

The present course is concerned with sexuality in general and the sexological problems confronted by the behavioral scientist in actual practice. In addition to topics concerned with the biological foundations for sexual behavior, themes directly associated with the professional practice of the behavioral scientist will also be examined: (mental) health care, research, and prevention. The case histories will be considered within different reference frameworks (psychodynamic, system theoretic, learning theoretic, and feminist).

*Essential reading*

To be announced.

*Practical*

**Coordinator:** Vacancy

**Objectives:** Special work form / skills training. The starting assumption in this training is that everyone is involved with sexuality in one way or another. As a social scientist, there is also a very high probability that you will be confronted with the sexuality of people at one point or another. There are nevertheless so many different ideas, norms, standpoints, and perceptions in the domain of sexuality that a very professional attitude must be adopted. One must also have considerable insight into one's own ideas, norms, behavior, and emotions on the theme of sexuality. In this training, the theme of sexuality will be approached via role playing, magazine articles, statements, and simulation interviews. Attention will be devoted to learning how to talk and ask about opinions, emotions, and behavior in the domain of sexuality. The student will also become acquainted with the sexological intake interview. The student will interview undertaken to gain insight into a person's sexual history. The professional consists of five meetings of three hours each. The last meeting is concluded with the presentation of a few case studies by the students.

*Instructional form*

12 tutorial group meetings, 5 practical meetings.

*Examination form*

To be announced.

**Course 3.7.5 Psychodiagnosics**

Course coordinator: Vacancy.

*Objectives*

This course is intended to further deepen the student's theoretical psychodiagnostic knowledge.

*Further description of the course*

The course takes the history and position of psychodiagnosics, ethics, and test theory as its starting point. Thereafter, the psychodiagnostic analysis of intelligence, personality, and various functions will be examined on the basis of a number of case studies. At the same time, the psychodiagnostic research will be illustrated in terms of the different phases in the course of human life (childhood and youth, adulthood and old age). In addition, each student will conduct an assignment in actual practice. The assignment consists of the conduct of a study of the psychometric qualities of a personality questionnaire. Among the skills to be practiced as part of this assignment are: the input of data into the computer, the reading of data into an SPSS file, the conduct of statistical analyses, and the reporting of research findings. The relevant research areas are: psychometrics, personality theory, neuropsychology, and developmental psychology.

The importance of this course lies in the fact that it is a necessary prerequisite for becoming a candidate for the so-called "Basic registration for psychodiagnosics."

*Essential reading*

To be announced.

*Instructional form*

12 tutorial group meetings, 5-6 lectures.

*Examination form*

To be announced.

**3.6 NON-COURSE RELATED PROGRAM FOR THE THIRD STUDY YEAR**

In the third study year, the non-course related instruction in such areas as statistics and computer skills will again be provided throughout the entire academic year. The instruction is the same for all students. In addition, as part of the writing skills instruction in the third year, the students are expected to write a so-called third year thesis.

**Computer skills III: Delphi**

Course coordinator: Remy Rikers, Experimental psychology.

*Objectives*

To acquire the knowledge and skills needed to build applications independently in Delphi.

*Further description of the program*

Delphi makes it possible to program in a more modern, efficient manner. Programs made with the aid of Delphi frequently resemble other Windows 95 applications. The system builds on the language of Pascal but offers, in addition, the possibility of building with little or no effort graphic interfaces to help the future user steer the program. A graphic interface can be seen as a window with different components (buttons, pictures, text, etc.) for the user to manipulate.

During the practical meetings, the student trains him/herself on so-called visual programming. An accomplished Delphi programmer always arranges the window first and then enters the necessary programming code. During the practical meetings, the student will also practice using the different possible components (windows, buttons, text fields, etc.) and their properties (position, size, color, content, etc.). When the graphic aspect is adequately mastered, greater demands are made on the already existing knowledge of Pascal and the skills needed to produce a well-functioning application.

*Essential reading*

- Practical book Pascal.
- Practical book Delphi.

*Instructional form*

5 lectures will be primarily devoted to the provision of demonstrations and useful tips; 7 obligatory practical meetings.

*Examination form*

Assignments and final examination.

**Statistics IIIa**

Coordinator: Gerard van Breukelen, Statistics.

*Objectives*

In many of the tasks in the field of psychology, tests and questionnaires are used as the method of measurement. In most cases, the answers of the individuals in question to a number of related multiple-choice questions are logically scored and summed to obtain a total score for the characteristic in question: intelligence, neuroticism, memory, or attitude (for example). A number of different questions can also then be posed: Do the items measure the same characteristic or are apples and oranges being compared? How reliable and valid is the total score as a measure of the characteristic in question? What is the measurement level of the total score?

How can one compare people who have responded to different subsets of items for one and the same characteristic (as in progress tests)? Which norms should the scores be compared to? These and related questions constitute the domain of so-called psychometrics. And this course offers an introduction to the most well-known classical and modern psychometric methods. The methods will be practiced using pen and paper but also using the computer and real data. The goal is to acquire a scientific attitude with respect to the foregoing questions.

#### *Further description of the program*

The course consists of two parts: classical and modern psychometrics. The following topics from classical psychometrics will be considered: classical reliability theory (Cronbach's  $\alpha$ , split-half, retest), item analysis, generalizability theory, and validity. The following topics from modern psychometrics will also be considered: logistic models, item information, item selection, and weighting.

#### *Essential reading*

- Crocker, L. & Algina, J. (1986). Introduction to classical and modern test theory.
- Orlando: Harcourt Brace Javonovich College Publishers.
- Handouts from the lectures.
- SPSS Manual.

#### *Instructional form*

For classical psychometrics: 2 lectures, 2 tutorial group meetings in which both theory and pen and paper assignments are discussed, and 3 seminars in which the SPSS analyses are discussed.

For modern Psychometrics: 2 lectures, 2 tutorial group meetings in which both theory and pen and paper assignments are discussed, and 2 seminars in which the SPSS analyses are discussed.

#### *Examination form*

Multiple choice questions, open book test.

#### **Statistics IIIb**

Coordinator: Gerard van Breukelen, Statistics.

#### *Objectives*

In addition to the statistical methods considered up to this point, there are many additional methods. At least two of these should be considered here: factor analysis and logistic regression. Factor analysis is a method to reduce the multitude of variables to a small number of underlying factors. At the beginning of this century, factor analysis was applied to reduce the scores on different tests to a small number of dimensions, such as verbal and spatial intelligence or extroversion and neuroticism. These days, factor analysis is frequently used to divide the items from a single questionnaire into subscales. Factor analysis is thus connected to psychometrics in such a manner.

Logistic regression is the analogue to linear regression and analysis of variance for a variable that is dichotomous and thus not continuous. Examples are: cured or not cured, passing or dropping out in a longitudinal study. With logistic regression, one can correct for the effects of other independent variables on the dichotomous variable and also examine the interactions between variables. The present course is intended to provide elementary training in factor analysis and logistic regression.

#### *Further description of the program*

The course consists of two parts: factor analysis and logistic regression. In the first part, the following will be considered: exploratory factor analysis (principal components, principal factors), values, loadings, rotations, confirmatory factor analysis (LSREL), caveats. In the second part, the following topics will be considered: stratified intercorrelation tables, odds ratios, logistic regression, interaction, relation to discriminant analysis, and loglinear regression.

#### *Essential reading*

- van Breukelen, G. (1999). Factor analysis. In Berger, Imbos & Janssen (eds.), Methodologie en Statistiek deel II (hoofdstuk 17). Universitaire Pers Maastricht.
- Norusis, M. (1990). SPSS Advanced Statistics Student Guide (chapter 4.
- Handouts from lectures

#### *Instructional form*

For both parts of this course, the following holds: 2 lectures, 2 tutorial group meetings in which both theory and pen and paper assignments are discussed, 2 SPSS assignments, and 2 seminars in which the SPSS analyses are discussed.

#### *Examination form*

Multiple choice questions. Open book test.

#### **Writing skills III**

Coordinator: Peter Vermeer, Neurocognition.

#### *Nature of the research paper*

During their third year of study, all students must write a third year thesis/paper. Approval of the students' final research practical (traineeship) is only provided when this third year paper is judged acceptable. Students who want to do their research practical abroad must write the third year paper in English.

#### *Choice of topic*

For this purpose, there are notebooks available at the psychology education office and learning resource center. The notebooks contain topics for students to choose from. For each topic, the faculty member who can guide and evaluate the research project is indicated. If a student wants to write the third year paper on a topic that is not included in the notebook, he or she must also arrange for a suitable supervisor.

*Guidance of the writing*

The faculty member responsible for the evaluation of the third year paper also guides the writing of the paper. Given that instructors have very little time for the guidance of the writing of such a paper, it is recommended that clear agreements be made ahead of time.

*Further requirements*

Two copies of the third year paper must be submitted in person to the education office together with a specific comment form which is provided by the education office.

On the title page, not only the title but also the following information should appear:

- the name of the author;
  - the ID number;
  - the name of the advisor for the content of the third year paper.
- The third year paper must be written on an individual basis.

The third year paper should be a minimum of 15 pages, excluding the title page, references, tables, appendices, etc. The maximum length is 25 pages. Less than the minimum is simply not allowed. Exceeding the maximum must be justified in a foreword, and the length of the paper will be then be taken into consideration

*Evaluation*

The third year paper is evaluated with respect to aspects of both form and content (formulation of the problem, argumentation, specific subject matter, and elements of form). The different aspects are evaluated separately but weigh equally in the calculation of the final score, which is the scores for the different aspects summed and then averaged to obtain a total score. The final score must be acceptable. For further explication of the different aspects of the evaluation, the "handbook for writing skills instruction" should be consulted.

*Submission procedure*

The student supplies two copies of the paper to the psychology education office. This office then sends the two copies of the third year paper and the evaluation (comments)

## CHAPTER 4

### Overview year 4

## The fourth study year

### 4.1 GENERAL

The final year of the psychology study consists of the choice of a number of electives, the conduct of a research practical, and a report on this research practical: the final thesis. For the first three course periods, the choice of electives comes from the Psychology Faculty. It is always possible to follow an elective course within a different faculty or university. Permission must first be requested from the examination board, however. The third year of the psychology study involved a differentiation of the curriculum, specialized instruction in one of the possible directions, and the choice of the final direction of study. The first half of the fourth study year consists of electives, which means that students can not only broaden their program but also further specialize it. All of this requires a wide offering of electives and instruction, however.

### 4.2 ELECTIVE COURSES

Coordinator: Rob Ruiter, Experimental psychology.

Students follow three electives chosen from a collection of 18 options. In addition, a choice can be made from courses 3.1a, 3.2a, or 3.3a for students studying the cognitive psychology major and from courses 3.1b, 3.2b, or 3.3b for students studying in the biological psychology major. The students must have selected three electives by the end of their third study year.

When less than six students have enrolled for an elective the instructor may dispense with it. Elective options with insufficient interest may also be replaced in the following academic year. Incidentally, every student may also contribute his or her own topic as the theme for an elective course (as an independent study), provided that the student can find an instructor who is prepared to advise him or her in doing this.

During the electives, individual activity stands central. At the same time, however, the students run the risk of losing contact with each other and the university. The elective instruction committee attempts to minimize this possibility by organizing a number of lectures, excursions, seminars, and other activities in order to — among other things — introduce potential fields of employment.

The elective course coordinators also see that the students spend a minimum of 6 hours a week on obligatory joint activities.

These joint activities can have very different forms. Examples:

1. A weekly seminar in which the student reports on how he or she is giving content to his or her choice of topic.
2. Reading groups. All of the students read an important piece on the elective topic.
3. A joint excursion.
4. A joint practical or workshop.

The elective course topics are typically contributed by the instructors. For each topic, a short description of the theme is provided in the "Electives" catalogue, which also contains information on the particular form of instruction. A brief overview of the elective options being offered in the periods 1 through 3 of the fourth study year (academic year 1999-2000) is presented below.

**Period 4.1****Period 4.2****Period 4.3**

Ergonomics methods and Naive theories / techniques: Evaluation of <i>Jettie Hoonhout</i>	Misconceptions <i>Reinout Wiers</i>	The prospects and limitations of expertise <i>Remy Rikers</i>
Clinical child neuro- psychology <i>Jelle Jolles</i>	Advanced programming techniques <i>Robert van Doorn</i>	Psychoactive drugs: Mechanics of action and effects on human behavior <i>Annemiek Vermeeren</i>
The neurocognition of language <i>Bernadette Schmitt</i>	Clinical neuro-psychology <i>Jelle Jolles</i>	Psychodiagnostics <i>Vacancy</i>
Behavior theory and therapy <i>Robert Horselenberg</i>	Laboratory skills <i>Fren Simulders</i>	Developmental disorders <i>Hans Stauder</i>
Teaching and learning <i>Marianne van den Hurk</i>	Experimental psychopathology <i>Ineke Wessel</i>	Behavioral neuroscience <i>Wijnand Raaijmakers</i>
	Philosophy of Consciousness <i>Rob de Vries</i>	Behavioral change <i>Rob Ruiter</i>
		Making you crazy: On the process of constructing normal and abnormal behavior <i>Peter Vermeer</i>
Individual topic Research participation	Individual topic Research participation	Individual topic Research participation

**4.3 RESEARCH PRACTICAL AND MASTER THESIS**

In the fourth year of study, four course periods are reserved for the research practical and writing of a thesis. To conclude the academic training of students, it is expected that they can independently design, conduct, evaluate, and report in the form of a thesis a well-circumscribed piece of research. The selected research practical should closely match the student's direction of study and major specialization. The research practical can also be undertaken abroad.

Depending on the major specialization and elective study of the student, the research practical may be undertaken in education (school counseling service, school medical services, special institutions) or in private industry (pharmaceutical industry, industrial research labs, food and drug testing organizations, applied research organizations, etc.). Those students with the (mental) health major may undertake the research practical in public centers for mental health (RIAGGS), psychiatric and general hospitals, rehabilitation centers, nursing homes, etc. Other potential places for a research practical are alcohol and drug rehabilitation centers, medical day care centers, and related institutions.

The students with the mental health or a major in neuropsychology who want to prepare themselves for employment in the area of mental health care are expected to acquire experience within a relevant mental health care setting. For these students, it may be specifically required that they complete their research practical in a clinical setting with a clear clinical orientation.

The range of research practicals and thesis topics reflects the range of employment possibilities in the field. In the psychology education office, a notebook with a list of possible practical locations is also available. Per practical, the following information is provided: a short description of what the practical entails, the type of research to be done, the name of the institution, the name of the contact person from the Faculty of Psychology, and the name of the contact person at the institution. A manual describing the steps to be taken for the research practical and when is also available. For more practical information on a research practical abroad, one should contact Ina Engelen, international relations officer of the Faculty of Psychology. For all remaining information and help with the choice of research practical and thesis topic, the student should first contact the coordinator of research practicals, Wijnand Raaijmakers (Neurocognition).