GUIDELINES

Inclusive teaching for neurodivergent students

Specific Learning Disorders (SLD)
Attention Deficit Hyperactivity Disorder (ADHD)
Autism Spectrum Disorder (ASD)

Version 2.0 - September 2025

POLITECNICO MILANO 1863

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Introduction

Inclusive teaching fosters a friendly learning environment that values the uniqueness of each student. It particularly helps to understand and reprocess content, to support personal organisation and educational planning, while fully **respecting individual neurodiversity.** The term neurodiversity does not refer to a diagnostic category but to the natural variability of brain function, which describes a person's characteristics, with their different ways of learning, processing information, reasoning, and interacting both socially and with the environment[1]. The DSM-5-TR[2] recognises as neurodivergent, compared to typical neurodevelopment, certain functioning profiles that present **Specific Learning Disorders (SLD), Attention Deficit Hyperactivity Disorder (ADHD), and Autism Spectrum Disorder (ASD)**. These profiles are specifically protected in the university environment by current legislation, and further emphasised by the most recent Guidelines

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1 Organizzazione Mondiale della Sanità. Classificazione Internazionale del Funzionamento, della Disabilità e della Salute: ICF. Erickson, 2002.

The ICF (International Classification of Functioning, Disability and Health) allows to describe the person, their disability and health conditions as the outcome of the dynamic interaction between individual characteristics (body functions and structures) and contextual factors (environmental and personal) by adopting the bio-psycho-social interpretive model.

2 Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR®)

of the **National Conference of University Delegates on Disability** (CNUDD),[3] conditional to the submission of complete and compliant specialised documentation. Neurodivergent students presenting normal or even higher levels of intellectual functions can achieve **the same educational objectives**.

If properly supported, these people can develop their potential, characterised in some cases by divergent thinking or problem-solving skills, creativity, quick intuition, boldness, determination, energy, curiosity and open-mindedness.

3 CNUDD Guidelines 2024

1. General framework and definitions

Specific Learning Disorders (SLD)

Specific Learning Disorders are defined in DSM-5 as **neuro-developmental disorders** that affect the ability to read, write and calculate automatically, correctly and fluently. They come with **various levels of impairment** (mild, moderate, and severe), and in many different combinations, resulting in a wide range of intellectual abilities, despite common weaknesses in certain specific areas:

- **In the efficiency of the** working memory, the complex cognitive system that holds and processes information for short periods of time, in the course of other continuous cognitive activities;
- **In processing speed.**

A poor **working memory,** in particular, affects the quality of learning, not only because **reading, writing and maths skills are poorly automated,** but also because they are slower and require a **greater expenditure of energy**, thus drawing cognitive resources away from **more complex** levels of **learning.**

Instead, **processing speed** may be reduced due to atypical layout and formation of neural pathways in some areas of the brain. Hence, information may **take longer** or **require more effort** to be understood as it is travelling by alternative and less efficient routes.

Attention Deficit Hyperactivity Disorder (ADHD)

Attention Deficit Hyperactivity Disorder (ADHD) is defined by the **DSM-5TR** as a **neurodevelopmental disorder** featuring a persistent pattern of **inattention** and/or **hyperactivity-impulsivity** that interferes with an individual's development and functioning at school, work or in a social setting. The **greatest impact of the disorder** concerns **executive functions**, i.e., the set of cognitive skills that allow one to organise, plan and maintain attention on prolonged tasks, manage time, regulate impulsivity, and monitor personal actions. Fragilities are particularly highlighted in some areas:

- **Concentration and attention**: difficulty in maintaining attention on a specific target (selective attention), in maintaining attentional focus on two stimuli at the same time (divided attention), in maintaining attention for a long time on the same task (sustained attention), and easy distraction from external stimuli or internal thoughts;
- **Hyperactivity and impulsivity**: struggling to sit or stand still during lectures, interrupting the flow of discussions out of time, or making quick decisions without considering the consequences;
- **Organisation, perception and management of time**: difficulty in planning and meeting deadlines for examinations, tasks or projects; tendency to procrastinate and postpone decisions, resulting in an accumulation of

work; difficulty in managing schedules and priorities, especially in contexts involving a lot of autonomy;

- **Memory and learning**: weak working memory and sometimes even long-term memory;
- **Emotional control**: internal restlessness, anxiety, frustration and overwhelm in stressful situations.

If they are not adequately supported, students with SLD and ADHD may develop a sense of **learned helplessness** over time, brought about by repeated school experiences of failure or frustration. This condition can contribute to mood disorders and anxiety, with a significant impact on study motivation, perceived self-efficacy, and overall psychological well-being.

Autism Spectrum Disorder (ASD)

Autism Spectrum Disorder (ASD) is defined by the DSM-5-TR as a neurodevelopmental condition that affects **communication**, **social interaction** and **behaviour,** i.e., the way a person perceives and interacts with the world.
The term "spectrum" emphasises the heterogeneity of the profiles and the variety of manifestations, which may present with **different levels of severity**, and be related to even very varied cognitive potential, thus requiring support, which could be considerable. However, students with **cognitive function in the normal range or higher**, who are able to cope with the full complexity of academic paths, enter university.
Even with significant inter-individual variability, which makes each profile unique, it is still possible to identify some common characteristics that may have an impact on active participation in academic life:

- **Difficulties in social communication**, both verbal and non-verbal, with

difficulty interpreting language, recognising implicit meanings such as metaphors and sarcasm, and using gestures and facial expressions consistent with the context;

- **Difficulties in social-emotional reciprocity,** with difficulty developing, managing and understanding relationships and social norms, interacting with others, and interpreting one's own and others' emotions;
- **Restricted interests and repetitive behavioural patterns**, with a preference for routine and predictability *(sameness*), difficulty in accepting changes or unexpected situations, intense and limited interests, tendency to hyper-focus, and presence of possible motor stereotypies;
- **Sensory sensitivity,** i.e., hyper- or hypo-reactivity to particular sensory stimuli in the environment such as sounds, lights, smells and textures. Sensory overload can lead to drops in concentration and emotional crises, accentuating feelings of frustration and exclusion;
- **Difficulties in personal planning and organisation**, such as autonomous management of deadlines, schedules and priorities.

Students with Autism Spectrum Disorder often engage in a phenomenon called *masking*, mere masking strategies to hide or 'disguise' autistic traits and adapt to social norms and expectations. In some cases, this mechanism can not only delay diagnosis but also have negative effects on a person's mental health and well-being, precisely because of the cognitive and emotional strain involved. The most frequent clinical implications include exhaustion and *burnout*, anxiety and depression, problems with self-esteem, as well as difficulties in interpersonal relationships and a possible sense of alienation from oneself.

Besides being very heterogeneous, the three neurodivergent profiles just described (SLD, ADHD, ASD) can also be mutually combined, considering their common neurobiological matrix. They may also present in **comorbidity with other disorders** such as:

- Generalised Anxiety Disorder and Obsessive Compulsive Disorder (OCD);

- Mood disorders (major depression and bipolar disorder);
- Emotional and behavioural disorders;
- Eating disorders (ED);
- Sleep disorders (chronic insomnia and circadian rhythm disorders);
- Dyspraxia (developmental disorder of coordination).

Hence, teaching methods, including those used in universities, should be designed to provide a **practical form of learning**, which helps students access content, and allows everyone to express their full learning potential. **Inclusive teaching** enhances the specificities of male and female students by supporting them in the most common difficulties, such as planning, spatial-temporal orientation, awareness and self-regulation, long-term memorisation, information retrieval and anxiety management.

2. Guidelines

The following guidelines have been developed on the basis of scientific evidence in the field. They draw on four strategic approaches to teaching:

- **Systematic**, to encourage more organised thinking and greater awareness of the topics covered in class;
- **Multimodal**, to make content accessible to students by reprocessing it in different ways, taking into account their main sensory pathways and methods of cognition;
- **Metacognitive,** to enhance students' capacity for self-regulation and control over their own learning;
- **Cooperative,** to reinforce motivation, self-esteem and confidence, as well as to develop teamwork skills.

Some examples of how to put these four approaches into practice are outlined below, **considering the two main teaching contexts typically encountered in academia**, precisely the classroom and exams board. *The option of following some of the guidelines provided, which are not mandatory, is closely linked to the particular teaching methods used, the scientific field of reference, and the personal choice of each teacher, and can be adapted within this framework.*

2.1 In the classroom

How to use a systematic approach

Students with **SLD and ADHD** may find it difficult to follow lessons and plan their study time. In particular, they often struggle to:

- Read slides quickly (SLD);
- Extrapolate key topics (SLD and ADHD);
- Take notes (SLD and ADHD due to difficulties in managing the double task of writing and listening, split attention and easy distractibility)
- Maintain attention for a long time (SLD and ADHD);
- Manage long working hours (SLD and ADHD);
- Control motor restlessness and emotional reactions (ADHD).

Pupils with **Autism Spectrum Disorder (ASD)** may experience difficulties in personal planning and organisation, finding it hard to fit into complex social and educational contexts. In particular, they often struggle to:

- Functionally process certain sensory stimuli (lights, sounds, smells);
- Deal with stress due to the physical proximity of other people, if they are close, numerous or lacking minimum space;

- Cope with the unpredictability of situations and phases of change;
- Manage emotional overload and modulate the reaction to received stimuli;
- Interact and relate to others, appropriately interpreting non-verbal communication and non-explicit language.

To help them with these difficulties, it might be constructive to use some of the strategies outlined below. These are general guidelines, which should be used in context, chosen and adapted to suit the particular course or discipline.

At the beginning of the course, clearly communicate:

- Course objectives, expected learning outcomes, and topics covered;
- The schedule of lectures, exercises and possible work assignments;
- Bibliography and evaluation methods.

Before each lesson

- If possible, share the teaching material with the students to allow them to make notes, so that they can focus on understanding the content and procedural aspects.

During lessons

- Divide the content of the subject into smaller teaching units.
- Communicate any programme changes in good time.
- Provide an overview of the topics to be covered.
- Draw attention to the links between topics by using various tools of synthesis (maps, diagrams, graphs, tables, etc.).
- Take a short break after about 45 minutes.
- Provide short, frequent summaries during the lesson, after breaks and at the end of class.
- Invite students to reflect on the application of what they have learned to real-life situations, using *brainstorming, case studies and role play.*

- Explain where the topics covered can be found in texts on their reading list.
- Accept any request to use isolating headphones with or without a microphone.
- Be flexible concerning sudden exits from the classroom and atypical modes of communication.
- Leave time for questions.

After the lesson

- If not previously done, allow students access to the recording, so that they can repeat the content at their own pace, to suit their own way of understanding.
- Share examples of exam test papers, including corrections.

How to use a multimodal approach

The multimodal approach, adapted to suit different cognitive styles, improves learning in neurodivergent people, and helps with critical processes, such as memorisation and comprehension of information. It may, therefore, be helpful to present content by using different methods:

- **Visual**: diagrams, images, graphs, videos, tables, numbered lists with keywords or mind maps;
- **Aural**: classroom teaching, group discussions, questions and answers, podcasts;
- **Kinaesthetic**: practical activities;
- **Technological**: software, online platforms, digital formats.

How to use a metacognitive approach

Neurodivergent students may have problems with self-regulation, i.e., they have limited awareness of the phases required to study effectively. The metacognitive approach improves awareness, counteracting any lack of motivation to study, and enhancing self-esteem. It may, therefore, be helpful to:

- Suggest the most effective working strategies with respect to one's own discipline;
- Invite students to **observe their own learning process** by identifying the strategies most in line with their functioning profile;
- Provide time for **open discussion** and interaction with and between students.

How to use cooperative learning modes:

Cooperative learning fosters integration between students with different learning styles, reinforcing motivation and self-esteem, as well as developing specific interpersonal skills that are particularly critical for neurodivergent people.
It is advisable to do the following, wherever possible:

- **Pay attention to any reported relational weaknesses,** both during group training and during the performance of work;
- **Prefer small working groups,** if explicitly requested;

- **Create groups that are both diverse and autonomous** in terms of skills, background and learning styles;
- **Ensure that students work cooperatively** and not competitively;
- **Provide constructive feedback** on both content and group dynamics;
- **Encourage self-assessment and reflection** when reviewing activities.

2.2 During an examination

The main difficulties for students **with SLD and ADHD** may include:

- Managing anxiety (SLD and ADHD);
- Reading the text or questions in a short time (SLD);
- Decoding the text of any questions containing morphosyntactic complexity (double negatives, passive phrases, multiple subordinate clauses, ...) (SLD);
- Writing answers in barely legible handwriting (SLD);
- Expressing ideas and/or content in a clear grammatical form (SLD and ADHD);
- Making careless errors, with inversion and/or transcription mistakes (SLD and ADHD);
- Doing mental arithmetic (SLD);
- Recalling information and formulas quickly and correctly, especially when a large programme of study is involved (SLD and ADHD);
- Remaining concentrated for prolonged periods of time without a pause (ADHD).

The greatest difficulties of students **with Autism Spectrum Disorder (ASD)** could be related to:

- Dealing with anxiety and emotional and sensory overload, which often leads to moments of stalemate and blackouts, with altered personal perception of time passing during a test and the use of short and long-term memory;
- Managing proximity with other people within the classroom;
- Decoding and understanding the implicit aspects of questions or deliverables;
- Carrying out mental calculations and recalling information and formulae correctly in good time.

AIDS AND COMPENSATORY TOOLS

Such difficulties can be compensated for by using special aids (e.g., extra time, calculators, PCs, concise formats, etc.). The need for these is assessed on a case-by-case basis by the Equal Opportunities Unit – Multichance Team – following a personal interview and the submission of a clinical certificate. The chosen aids are then added to the dedicated application for the student to choose those he/she considers most useful for each exam. The Lecturer will receive an automatic email in relation to the request.

In addition, in the case of ASD, the Lecturer will receive a timely e-mail from the Multichance team to convey any further customised requests.

Further operational suggestions for the three neurodivergent profiles are summarised below.

On the occasion of written examinations:

- Only allow the aids requested through the application and/or via Multichance mail, and explain their use very clearly before the exam begins;
- Ensure silence and confidentiality even during the extra time to facilitate concentration and minimise discomfort;

- Only use the concise format if its contents do not affect the objectives of the test as a means of assessment;
- Draft the exams in an accessible format (see Annex 1);
- If possible, arrange intermediate tests during the academic year to allow students to self-assess and to spread the study load;
- Have insulating earphones worn/reserve specific seats within the classroom, if explicitly requested.

For written examinations:

- Allow students sufficient time to formulate their answers, given that they may have problems organising their responses and recalling particular words;
- While questioning a student, make use of a blank sheet of paper to illustrate any useful links, which may compensate for weaknesses in the working memory;
- Put the student at ease by creating an encouraging and stimulating dialogue;
- Ensure the performance of the test in a more private setting, if agreed upon in advance with Multichance, in the case of a certified clinical situation;
- If necessary, offer the option of dividing examinations requiring the preparation of a particularly extensive syllabus and/or bibliography into two parts.

Annex 1

Accessibility of teaching materials

Neurodivergent students often experience significant difficulties in accessing unstructured texts. Unreadable fonts and inaccessible formats can hinder their ability to learn effectively.

Hence, it is advisable to provide learning materials in accessible formats by developing the principles of *Universal Design* in learning contexts, precisely fairness (for all), flexibility in modes of use, simplicity of use, correct sensory perceptibility, and error tolerance. This will allow students to autonomously customise the use of learning materials according to their physical, sensory or cognitive needs. Of course, they can make texts more readable by changing the font, font size or spacing, and colour contrasts, rather than vocalising them, or transforming them into audio files or visual content. For technical guidance on the feasibility of accessible documents, please refer to Microsoft Office guidelines for creating accessible documents, and to the WCAG 2 Overview | Web Accessibility Initiative (WAI) | W3C.[4]

4 For further information: Information Accessibility Guidelines and Guidelines for the Accessibility of Teaching Material with Formulas and Graphs Version 1 | 10-2020, Polin Laboratory, Department of Mathematics University of Turin

Regulatory framework

Italian Law no. 104 of 5 February 1992 "Draft law for assistance, social integration and rights of disabled persons".

Law no. 162 of 21 May 1998 "Amendments to Law no. 104 of 5 February 1992 concerning support measures in favour of severely disabled persons".

Law no. 17 of 28 January 1999 "Integration and amendment of framework law no. 104 of 5 February 1992, for assistance, social integration and rights of disabled persons".

Law no. 68 of 12 March 1999, "Standards for the right to work of the disabled".

Law no. 4 of 9 January 2004, "Provisions to facilitate access to IT tools for disabled people".

Law no. 18 of 3 March 2009, "Ratification and Implementation of the United Nations Convention on the Rights of Persons with Disabilities, with Optional Protocol, implemented at New York on 13 December 2006 and Establishment of the National Observatory on the Status of Persons with Disabilities".

Law no. 170 of 8 October 2010, "New regulations on specific learning disorders in schools".

Ministerial Decree no. 5669 of 12 July 2011, "Provisions implementing the Law of 8 October 2010, New regulations on specific learning disorders in schools. Guidelines for the right to education of pupils and students with specific learning disorders".

Guidelines (annexed to Ministerial Decree July 2011): Guidelines for the right to education of pupils and students with specific learning disorders.

Law no. 37 of 3 May 2019, "Provisions for the fulfilment of obligations arising from Italy's membership of the European Union - European Law 2018".

Law no. 25 of 28 March 2022, "Conversion into law, with amendments, of Decree Law no. 4 of

27 January 2022, on urgent measures in support of enterprises and economic operators, labour, health and territorial services related to the COVID-19 emergency, as well as for the containment of the effects of price increases in the electricity sector", Article 7 of which (paragraph 2a et seq.) introduces fundamental rights for workers with SLD.

Art. 19, paragraph 5(2) of Decree Law no. 44 of 2023, converted by Law no. 74 of 2023, "Conversion into law, with amendments, of Decree Law no. 44 of 22 April 2023 on urgent provisions for the strengthening of the administrative capacity of public administrations" amending Article 16 of Law no. 104 of 5 February 1992.

Legislative Decree no. 222 of 13 December 2023, "Provisions on the redevelopment of public services for inclusion and accessibility, in implementation of Article 2(2)(e) of Law no. 227 of 22 December 2021".

Italian Legislative Decree no. 62 of 3 May 2024, "Definition of the disability condition, basic assessment, reasonable accommodation, multidimensional assessment for the elaboration and implementation of the personalised and participatory individual life project".

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