**Scientific Writing and Research Methodology** PSPHY PR1, (M. Sc. Physics 4th Sem)

Credits 4 LTPS (3106)

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**Module 4**: Intellectual Property Rights and Associated Issues: History of Patenting, Ethics in writing, Plagiarism, paraphrasing and copy write violation. Consequences of plagiarism. Why not to fudge, tinker, fabricate or falsify data. Digitalizing Culture, Free Culture and Open Access Journals. Journals and Publishers: Monopolistic practices by Academic Publishers.

**Intellectual Property Rights**

In the global knowledge based economy intellectual property creation and protection are of critical importance. Intellectual Property Rights (IPR) are statutory rights granted to the products of intellect i.e. rights granted for innovative and creative products/works. Like any other property rights IP can be sold, gifted, licensed and inherited. IPR covers patents, copyright, trademark, industrial designs, geographical indications, layout design of integrated circuits, new plant varieties and undisclosed information or trade secrets.  Patents designs, trademarks and geographical indications are administered by the Controller General of Patents.  Designs and Trademarks are under the control of the Department of Industrial Policy and Promotion, Ministry of Commerce and Industry. Copyright is under the charge of MHRD. The Act on Layout design of Integrated Circuit is administered by the Ministry of Telecommunication and Information Technology. Protection of Plant Varieties and Farmer’s Rights Authority is administered by Ministry of Agriculture.

**Components of IPR**

A patent is an exclusive right granted by a country to the owner of an invention to make use, manufacture and market the invention. An invention may be defined as a novel idea which permits in practice the solution of a specific problem. For an innovation to be registered as patent, it must be new, involve an inventive step, capable of industrial application. Patents can be granted for products as well as processes. In India the term of a patent is 20 years from the date of filing the application. Plants and animals except microorganisms cannot be patented. However new plant varieties are protected under the Protection of Plant Varieties and Farmer’s Rights Act 2001.

Copyright can be acquired in relation to works of authorship that include literary works including research papers,  musical works, and accompanying lyrics, dramatic works and dialogues, pantomimes, choreography, pictorial, graphic and sculptural works inclusive of drawings, paintings photographic works, architecture, works of applied arts, maps, plans, sketches, motion picture and other audio-visual works and sound recording. *Computer programs or software are covered within literary work*. The term of a copyright is the lifetime of author plus 60 years.

A Trademark is a visual system in the form of a word, a symbol or a label applied to article of manufacture or sale with a view to indicating to the consumer the origin of manufacture. It helps to distinguish such goods from similar goods manufactured by the others in the same trade. The term of protection of Trademark is 7 years renewable from time to time.

Industrial design protects the aesthetic aspects such as shape, texture, colour and pattern of a product rather than technical features. The term of an industrial design is 15 years.

Geographical indications (GI) identify a good as originating from a territory, a region or a locality where a given quality reputation or other characteristic of the good is essentially attributable to its geographic origin. Some examples of GI are Darjeeling tea, Basmati rice, Kashmiri Pashmina etc. Any association of persons or producers or any organization or authority established by law can apply for GI’s registration. The term of GI is 10 years but may be renewed from time to time.

Semiconductors Integrated Circuit Layout Design Act 2000 provides protection for IC layout designs. The term of IC layout protection is 10 years.

Undisclosed information refers to trade secrets or know-how that has the commercial value because it is secret and that has been subjected to reasonable steps to keep it secret. For example the know-how to produce Rooh Afza a popular drink is a trade secret.

**Significance of IPR**

The IPR system helps to strike a balance between the interests of the innovator and the society. Several acts and legislations have been enforced to protect IPR.

Faculty members of professional institutions need to become more familiar with IPR & IP laws. One of the important sources of technology lies in patents which is an important component of IPR. All governments give monopoly rights on patents to encourage scientific and technological inventions. The knowledge of IPR is important for students and faculty of Science, Engineering, Management, Pharmaceutical and Law Institutes. This would help them in the process of R&D.

**Ethics in Writing**

Honesty, due diligence and respect of the law are as much desirable in publishing a research paper as in any other human endeavour. Both authors and publishers must conform to high standards of honesty and academic integrity in the entire process that begins from the start of research and ends in the work getting published in a journal. Ethical considerations take several forms and encompass all aspects of the research and publication process.

During the conduct of the research, reliable and accurate data collection, followed by sincere judgment of their implications is vitally important. All aspects of research must be carefully designed with due consideration for resource availability in terms of both equipment and human resources. The entire research team must agree on the aims and scope of the project. A rough division of labour must be established early on so that individual members of the team are aware of what is expected of them. It is essential for research team members to have frequent physical meetings or at least active on-line collaboration to keep the research moving. Disagreements can arise during the course of the research work and it is the responsibility of the team leader to arbitrate in such circumstances. Once a manuscript is ready for submission, it is very important that all co-authors see it and go through it so that they agree on its contents and coverage. This greatly reduces the chances of surprises and misunderstandings later on.

An extremely important subject that unfailingly appears during any discussion of academic publications is that of plagiarism. A publication in any form makes the assumption that the content is original and was created by the authors in good faith. Nowadays, it is standard practice to explicitly declare content to be the sole creation of the author or of a team of authors when a thesis or dissertation is being submitted. Most journals do not require such an explicit declaration but this is, nevertheless, taken as an un-spoken fact. It is a good practice to include a sentence to this effect in the cover letter that accompanies a manuscript for publication consideration. Violation of this gentleman’s rule is considered an extremely serious infarction and can have serious consequences. Copying someone else’s words without proper acknowledgement is un-ethical and just plain wrong. Publishers do employ means to detect plagiarism in order to ensure originality of content. This ranges from the use of plagiarism detecting software to running portions of text through search engines to detect similar word usage in published literature. Penalties for plagiarism include withdrawal or retraction of the article and a ban on further publications with the journal concerned. Needless to say, it also badly damages one’s professional reputation.

Plagiarism does not merely apply to textual information – it applies to the un-authorized reproduction of illustrations as well. Copying figures that have previously appeared in a publication or on the web into a new publication (whether print- or web-based) is also considered as plagiarising content. If reproducing a previously-published figure is an absolute necessity (e.g. in a review article) then permission must first be obtained from the copyright holder. This also applies to pictures that appear on any internet website. Once permission has been obtained, graphic material can be reproduced in its original form, accompanied by a clear acknowledgment of its original source. This is usually in the form of a sentence that is added to the figure caption. Typically, it appears as: “Reproduced with permission from ...”. In case, you are writing a magazine article and are including a picture that has been supplied by a company then you can include an alternative sentence after the main caption. In this case it is typically stated as: “Courtesy of ...”. Note that permission still needs to be obtained if you create a plot or other graphical content which is based on data from a separate source or if you have modified a previously-published figure. Finally, you should also seek permission if you intend to reproduce a figure that has appeared in another publication where you are an author or a co-author. This is because for published articles most rights belong to the publisher. Generally, permission to reproduce such a figure is easily granted.

If a scientific fact that was established by other researchers is mentioned in a manuscript then its source publication must be properly cited. Never state such a fact or set of facts and leave it without attribution. Reviewers are usually quick to notice the absence of references where due and point this out in their review reports. Knowing this, it is best to leave statements of established facts out of a manuscript if their source is not known (this, of course, does not apply to ‘established wisdom’ – facts that are so widely known that no references are needed).

One particular research project can generate multiple publications. This is absolutely fine as long as each publication contains new material that is not present in the other publications. Apart from this, several publications may share similar text on research background and literature survey without violating ethical considerations. The practice of publishing multiple papers by altering the text in trivial fashion while based on essentially the same material is extremely undesirable. This falls squarely within the definition of duplicate publications and serves no proper academic purpose. Attempts at multiple publications are often easily detected and such submissions are quickly rejected by either journal editors or manuscript reviewers. This practice is even given away by just a look at the contents of a publications list and leaves a bad impression. With good research practice there is no need for resorting to multiple publications and it must be discouraged from the start of one’s publication career.

**Copyright in context of research papers**

At the time a manuscript is prepared, it is an intellectual property that belongs to the authors. They hold all rights to their manuscript and can, thereby, exploit it in any manner they see fit. The situation is different if the manuscript has been expressly commissioned by an individual or an organization. In that case, the manuscript is described as ‘work of hire’ and the rights belong to the commissioning entity. This implies that the author or authors have been reimbursed for the task of writing the manuscript and, consequently, have no legal claim over the ownership of the manuscript. The second situation is uncommon but may arise from work undertaken on behalf of government departments or for industrial consultancies. No matter who the rights initially belong to, if the manuscript is subsequently published then the copyright, in full or in part, will need to get transferred to the publisher. A copyright transfer form, stating the title of the manuscript and the names of all authors, as well as legal descriptions of which rights are being transferred, is filled and sent to the publisher. This form is supplied by the publisher to the corresponding author who is the main contact with the publisher. The transfer of rights takes place either at the time the manuscript is initially submitted for consideration to the publisher or when the manuscript has been reviewed and accepted for publication. In the former case, the copyright transfer becomes automatically null and void in case the manuscript is not accepted for publication later. The authors are then free to submit the manuscript to a different publisher.

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**Free Culture and Open Access Journals.**

There are different ways of publishing a paper. Mainly these, fall into two broad categories called the subscription model and the open access model. These differ, principally, in how the costs of paper publication and dissemination are handled. Traditionally, most papers have been and continue to be published under the subscription model where publication costs are borne by the journal publishing company and the contributing authors are not required to pay anything. Subscription journals get their costs recouped by obtaining comprehensive copyrights over the articles from the authors. Then they make the article available in print and/or on-line version to paid subscribers only. Nonsubscribers can only get access to the full article on the payment of a fee that is set by the publisher. This is the most widely used form of paper publication model in use around the world. In most cases, authors don’t need to pay anything, however, some journals do charge a ‘page fee’ if the paper exceeds a certain number of pages in length. Payments are, however, only required once the manuscript has been accepted for publication after peer review. Institutional libraries usually maintain subscriptions for hundreds to thousands of journals by making appropriate payments to publishers. In return, researchers affiliated with these institutions can view and download an unlimited number of papers from subscribed journals.

For many years, the subscription model was the only mode available for publishing technical papers in scientific journals. From the 1980s, however, another path for publication called ‘open access’ has become increasingly available. With this model, authors retain most copyright privileges but pay a substantial fee to the publisher to offset all publication costs. In return, the publisher makes it available for free on-line. The article can be downloaded by anyone completely free of cost. This guarantees the widest possible dissemination of the research work which is conducive for greater visibility and, consequently, larger number of citations in other papers. Most journals now offer an open access publication option, in addition to the more traditional subscription model. Such a combined model is sometimes referred to as a ‘hybrid’ model. Some journals are purely open access. These are all relatively recently established publications because the open access model only emerged during the later part of the last century. Even some well-established and highly renowned publishers have set up some purely open access journals which are very well regarded. For example, the American Geophysical Union (AGU) now publishes several purely open access journals, such as Earth’s Future, Earth and Space Science etc.

**Predatory journals:**

These are publications of very dubious quality, often publishing work only on-line with little or no peer review. Most such publications are solely web-based and actively solicit papers from researchers all over the world. They have no print version and only employ an open access model where submitted manuscripts are quickly placed on the web (often within ten days or less of the receipt of the manuscript) in exchange for a fee which is often negotiable! Almost all papers appearing in predatory journals are of very low scientific quality, often written in poor English and have not been through the usual stringent peer review process that is followed by all established publishers of repute. It is now a common practice for predatory journals to send numerous spam e-mails to published authors, asking for their ‘next paper’. They get hold of e-mail addresses from the contact details of corresponding authors that appear on published papers in respectable journals. Simply ignore such e-mails, if you receive them, and tag them as spam. There should be no consideration for such ‘journals’ in your publication plans. Jeffrey Beall - a veteran librarian has been a well-known critic of predatory open access journals and has compiled an extensive list of such journals. This list appears at:

https://beallslist.weebly.com/

Another such list appears at:

https://predatoryjournals.com/journals/

**Sources:**

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Intellectual Property Rights (IPR) A Bulletin from TIFAC

Intellectual Property Rights, a CSIR Journal

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